D'YAKOVA, K.G.

Studying the population dynamics of murine rodents in the mountain oak forests of the Khoper Preserve. Trudy Khop.gos. zap. no.3:97-102 '59. (MIRA 16:1)

(Khoper Preserve—Mice)

MAKAROV, V.V.; D'YAKOVA, K.G.

Catching desmans in the Khoper Preserve in 1956-1957. Trudy Khop.gos.zap. no.3:5-14 '59. (MIRA 16:1)
(Khoper Preserve—Desmans)

D'YAKOVA, K.G.

Preliminary results of artificial distribution of desmans' in Kursk and Tomsk Provinces. Trudy Khop.gos.zap. no.5:131-138 '61. (MIRA 16:2)
(Kursk Province—Desmans) (Tomsk Province—Desmans)

LOZOVOY, A. V., D'YAKOVA, M. D., STEPANTSEVA, T. G.

"On Certain Physical Constants of Mixtures of Hydrocarbons -- II," Zhur. Obshch. Khim., 9, No. 6, 1939. Received 14 July 1938.

Report U-1517, 22 Oct 1951

USTINOVA, Ye.I.; D'YAKOVA, M.I.; SHCHEDRINA, R.N.

Development of the embryo and endosperm in Mirabilis jalapa L. under conditions of restricted pollination. Nauch. dokl. vys. shkoly; biol. nauki no.3:173-179 '61. (MIRA 14:7)

1. Rekomendovana kafedroy genetiki i selektsii Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(FERTILIZATION OF PLANTS)

D'YAKOVA, M.I.

Production of tetraploid buckwheat under natural conditions. Trudy MOIP. Otd.biol 5:173-179 '62. (MIRA 16:5)

1. Kafedra genetiki i selektsii biologo-pochvennogo fakul'teta Moskovskogo gosudarstvennogo universiteta.
(BUCKWHEAT BREEDING) (POLYPLOIDY)

18.1285

S/126/60/010/006/016/022
E193/E483

AUTHORS: D'yakova, M.A. and Bogachev, I.N.

TITLE: Decomposition of the Beta-Solid Solution in a Titanium-Manganese Alloy

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.6, pp.896-902

TEXT: The object of the present investigation was to study the kinetics of the solid state transformation taking place in a titanium-base alloy containing 6.5% Mn, 0.18% Fe, 0.07% Si, 0.05% C, 0.043% N and 0.005% H; this particular alloy having been chosen as one in which the β-phase can be retained by quenching. The experimental specimens were prepared by melting the alloy in a vacuum-arc furnace, remelting it in an argon-arc furnace, forging, rolling to the final size and then vacuum-annealing at 650°C. The kinetics of the decomposition of the β-phase were studied by the dilatometric method, hardness and electrical resistance measurements and metallographic examination. Some of the dilatometric measurements were taken on specimens quenched from 900°C and then heated at the rate of 200°C/h. Other experiments consisted in heating the specimens to 900°C,

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Decomposition of the Beta-Solid Solution in a Titanium-Manganese Alloy

transferring it to a salt bath and studying the changes of various properties as a function of the duration of the isothermal treatment. It was concluded from the results obtained that decomposition of the β-phase can take place in two temperature ranges, separated by a temperature interval within which the β-phase appears to be stable. One range extends from 420°C up to the temperature of the polymorphic transformation, and decomposition of the β-phase at these temperatures leads to the formation of the α-phase. The second range extends from 150 to 400°C, the product of decomposition in this case being an intermediate ω-phase. In the 420 to 470°C temperature range, these two processes overlap and the decomposition of the β-phase results most likely in the formation of the α-phase, via the intermediate ω-phase. The formation of the ω-phase is not reflected in any changes in the microstructure of the alloy but is revealed by an increase in hardness (up to 48 R_C), a decrease in volume and a decrease in the electrical resistivity (down to 1.4 ohm mm^2/m). The decomposition

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Decomposition of the Beta-Solid Solution in a Titanium-Manganese Alloy

of the β-phase, leading to the formation of the α-phase via the intermediate ω-phase, is accompanied by an increase in hardness, an increase in volume and a decrease in electrical resistivity (down to 1.0 ohm mm^2/m). Finally, decomposition of the β-phase, leading directly to the formation of the α-phase, brings about a decrease in both hardness (down to 35 R_C) and electrical resistivity (down to 1.0 ohm mm^2/m). There are 5 figures and 5 references: 2 Soviet and 3 English.

X

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova
(Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: July 30, 1960

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21362

18.1285 1454, 1555, 2808

S/126/61/011/004/009/023
E021/E435

AUTHORS: Bogachev, I.N., Mints, R.I., Petukhova, T.M. and D'yakova, M.A.

TITLE: The Influence of Phase Composition and Structure on the Cavitation Stability of Titanium and its Alloys

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.4, pp.557-563

TEXT: Testing was carried out on an erosion stand with a circumferential speed of rotation of the samples of 78 m/sec, a constant pressure of water 0.28 atm, diameter of jet 8 mm and distance 1.8 cm. The cavitation stability was evaluated by the loss in weight every 5 hours of testing. Alloys with α-phase structure (commercial Ti type ВТ1Д (VT1D), Ti-3.5 Al, Ti-2.5 Al-5Sn, Ti-6Al-4V) showed slip lines and twins in the initial stages. With increase in time, cracks developed along the twins, the slip lines and along the grain boundaries. Table 1 shows the influence of alloying on the stability of α alloys. Solid solutions of the β phase (Ti - 3.25 Al - 10.45 Cr - 7.95 Mo - 0.11 Fe and Ti - 9.6 V - 2.84 Al - 3.8 Mn) showed some disintegration simultaneously in the grain boundaries and in the grains (Fig.2).

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The Influence of Phase ...

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Although the β solid solutions were more resistant to cavitation than the α, they were liable to sudden fracture and were unsuitable for use in such conditions. Alloys with a martensitic structure were also tested. The martensitic structure was produced by fast cooling from the β region. During testing the α'-phase was destroyed more uniformly than the α phase. Disintegration began at the grain boundaries and in the grains at the boundaries of the martensitic needles. Fig.1 shows the initial stages of cavitation of the α and α'-phases. The martensitic structure has a high resistance to cavitation as shown by Fig.3, where the loss in weight (mg) is plotted against the time of testing (hours) for the α, α', α + α' and α + β phases of the same alloy. The presence of a fine acicular martensitic structure leads to increase in the cavitation stability. The resistance to cavitation of an alloy consisting of α + β was intermediate between the resistance of α and α'. Disintegration began at the boundaries of the two phases and developed in the phase which was less stable towards cavitation. A mixture of β and ω phases was obtained by heat treatment of the Ti - 9.6 V - 2.84 Al - 3.8 Mn alloy. The formation of the ω phase

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led to an increase in hardness from 360 to 495 kg/mm^2. Cavitation caused a network of slip lines as in the case of the β phase. The resistance to cavitation of the β + ω alloy was higher than that of the β alloy, but it was liable to sudden fracture as was the β alloy. Thus the cavitation stability of titanium alloys depends on the structure and phase composition and not on the mechanical properties. There are 4 figures, 2 tables and 2 references: 1 Soviet and 1 non-Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova
(Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: July 30, 1960

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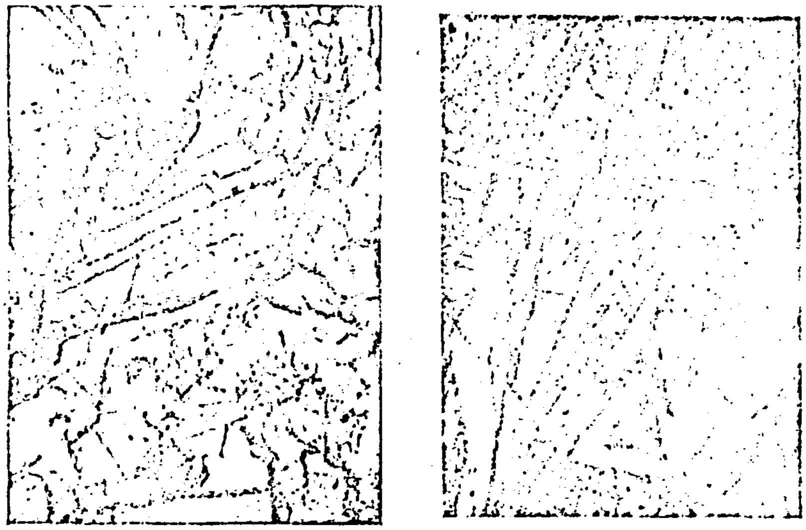

Fig. 1

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Fig.1 on page 559 attached to [illegible] 24

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The Influence of Phase ...

Fig.2.

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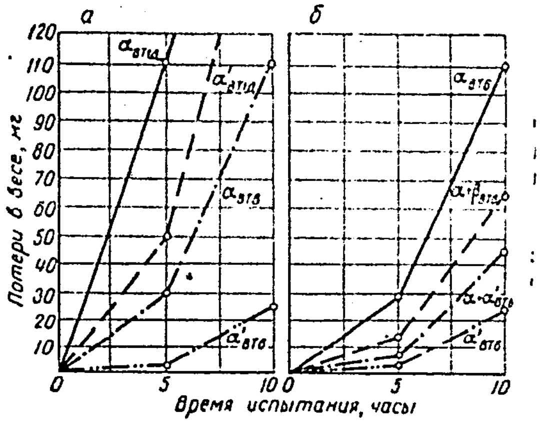

Fig.3.

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The Influence of Phase ...

Table 1. Legend:

1 - alloy
2 - quenched in water
3 - hardness kg/mm^2
4 - weight loss mg
5 - after 5 hours test
6 - after 10 hours test
7 - α phase, VT1D (commercial Ti)
8 - α phase Ti - 3.5 Al
9 - α phase Ti - 2.5 Al - 5Sn,
10 - α phase BT6 (VT6) (Ti - 6 Al - 4 V)

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The Influence of Phase ...

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Table 1.

① Сплав	② Закалка в воде	③ Твердость, кг/мм²	④ Потери в весе, мг	
			⑤ за 5 часов испытания	⑥ за 10 часов испытания
⑦ α-фаза сплава ВТ1Д	от 800°	112	169	708
⑧ α-фаза сплава Ti + 3,5% Al	от 970°	245	50	178
⑨ α-фаза сплава Ti + 2,5% Al + + 5% Sn	от 970°	270	17	98
⑩ α-фаза сплава ВТ6	от 680°	283	29	117

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S/126/61/012/004/015/021
E193/E383

18.1285

AUTHORS: Bogachev, I.N. and D'yakova, M.A.

TITLE: The kinetics of decomposition of β-solid solution in a heavily-alloyed titanium alloy

PERIODICAL: Fizika metallov i metallovedeniye, v. 12, no. 4, 1961, 607 - 612

TEXT: It has been shown by other workers (e.g. Ref. 1 - E.L. Harmon, J. Kozol and A.R. Troiano, Trans. ASM, 1958, 50, 418) that, in the presence of elements stabilizing the β-Ti phase, decomposition of this phase in solid Ti-base solutions can be accompanied by the formation of a hexagonal ω-phase ($a = 4.6$ kX, $c = 2.82$ kX), orientated relative to the β-phase in such a way that $a_\omega \parallel [110]_\beta$ and $c_\omega \parallel [111]_\beta$.

The object of the present investigation was to study the kinetics of decomposition of the β-phase in a Ti-base alloy, containing 9.65% V, 3.84% Mn and 2.57% Al, by hardness, electrical resistance and dilatometric measurements. In the first series of experiments, the specimens were heated in

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The kinetics of decomposition E193/E383

vacuum for one hour at 900 °C, quenched in a molten nitrate bath at various temperatures, held at a given temperature for various times and then cooled to room temperature, after which the relative change in length, $\Delta\ell/\ell$, of the specimens was determined. The results are reproduced in Fig. 1, where $\Delta\ell/\ell \times 10^{-4}$ is plotted against time (hrs) at the temperature (°C) indicated by each curve. It will be seen that isothermal treatment at temperatures between 160 and 380 °C brought about contraction of the alloy, which indicated the formation of the ω-phase. The results of hardness measurements of similarly-treated specimens are reproduced in Fig. 4, where Vickers hardness is plotted against the isothermal-treatment temperature, the time at temperature being indicated by each curve. In Fig. 5, the electrical resistivity (ρ, Ω mm^2/m) of the alloy is plotted against the temperature (°C) of isothermal treatment of 30 min (crosses), 3 hours (triangles) and 6 hours (circles) duration. Dilatometric heating and cooling curves were also constructed and metallographic examination of some specimens was carried out. Based on the results obtained, a diagram of

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The kinetics of decomposition S/126/61/012/004/015/021
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the isothermal transformation (TTT curves) of the β-phase in the alloys studied was constructed. It is reproduced in Fig. 3, showing the constitution of the alloy as a function of temperature (vertical axis, °C) and time (horizontal axis, sec); the experimental points denoted by circles are based on metallographic examination; the dilatometric data are represented by x - x and x -- x lines indicating, respectively, the beginning and end of volume expansion, and by dots indicating the beginning and end of the volume contraction. The results of the present investigation indicate that there are two distinct modes of decomposition of the β-phase in the alloys studied. Decomposition at temperatures above 500 °C entails the formation of the α-phase. In the 160 - 370 °C range, the ω-phase is formed which brings about a considerable increase in hardness and causes embrittlement of the alloy. Between 380 and 480 °C the formation of the α-phase is proceded by the formation of the ω-phase, the latter also being accompanied by an increase in hardness. It was also found that the β → ω transformation was reversible. Specimens, hardened by quenching from 900 °C and isothermal treatment at

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X

300 °C, can be fully restored to their soft condition by 30 sec holding at 500 °C, followed by water-quenching. Partial restoration only can be attained in the case of material isothermally treated at 350 or 370 °C or when the duration of the treatment is excessively long.
There are 5 figures, 1 table and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M. Kirova (Ural Polytechnical Institute im. S.M. Kirov)

SUBMITTED: March 21, 1961

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PROCESSES AND PROPERTIES INDEX

Ca

Conversion of naphthalene into tetralin. M. K. D'YAKOVA. *J. Applied Chem* (*U. S. S. R.*) 4, 819-30(1931).—$C_{10}H_8$ is best purified with metallic Na, the consumption of which can be decreased by pretreating $C_{10}H_8$ with 5% KOH. Conversion to tetralin (C_6H_6 and its homologs are also obtained) is accomplished at 435-445° under the initial pressure of H_2 of 100 atm. and final pressure of 235 atm. with Mo compds. (preferably Mo oxide) as catalysts. Milder exptl. conditions leave $C_{10}H_8$ unchanged. Hydrogenation in presence of Ni catalysts proceeds under 20 atm. and 180-200°. Patent and literature references are given.

V. KALICHEVSKY

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CR

22

Cracking of naphthene hydrocarbons. I. M. K. D'yakova and A. D. Petrov. *J. Gen. Chem.* (U. S. S. R.) 3, 670 84(1933).—The thermal stability of the following naphthenes was investigated by cracking at ordinary pressure in a N atm. without catalysts in a modified app. of Kanning and Brown (*C. A.* 25, 5820): synthetic decalin, bicyclohexyl, methylisopropylbicyclononane and amylcyclohexane and naphthenes boiling within the same range as the individual naphthenes but isolated from Grozny nonparaffin oil and from the products of cracking of olefins under pressure. According to the yield of liquid products and gas and to their consts., the naphthenes of the Grozny oil are more closely related in their thermal stability to the monocyclic naphthenes with a long side chain than to the bicyclic naphthenes of the type of decalin and bicyclohexyl. Chas. Blanc

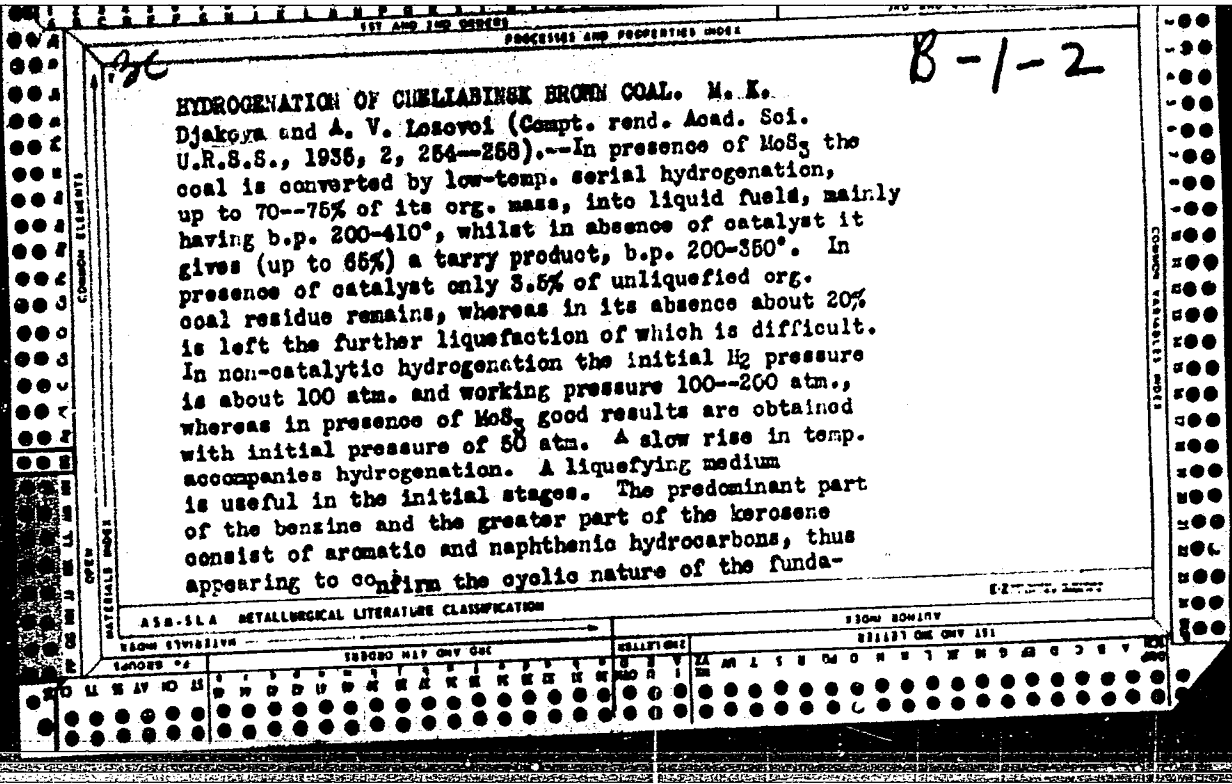
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

The chemical composition, properties and methods of treatment of primary tar from the lignites of Tchéliabinsk. Berginization of tar. A. V. Lozovoi and M. K. D'yakova. *Compt. rend. acad. sci. U. R. S. S.* 3, 620-4 (in French 624-5) (1934).—Cracking-hydrogenation expts. on 230-370° primary tar showed that catalytic berginization followed by low-temp. hydrogenation converted 70-80% of the tar to motor fuel below 230° with less than 1% methane and 0.25-3% carboids. The residue, contg. 60% pitch, is converted into a fraction boiling below 280° and solar oil, used in subsequent berginization. MoS on brick fragments is a cracking-hydrogenation catalyst particularly suited to this material because it is stable, easily regenerated and very active. Details of hydrogenation are given.

W. F. Bruce

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



3c

B-1-2

HYDROGENATION OF CHELIABINSK BROWN COAL. M. K. Djakoya and A. V. Losovoi (Compt. rend. Acad. Sci. U.R.S.S., 1935, 2, 254--258).--In presence of MoS_3 the coal is converted by low-temp. serial hydrogenation, up to 70--75% of its org. mass, into liquid fuels, mainly having b.p. 200-410°, whilst in absence of catalyst it gives (up to 65%) a tarry product, b.p. 200-350°. In presence of catalyst only 3.5% of unliquefied org. coal residue remains, whereas in its absence about 20% is left the further liquefaction of which is difficult. In non-catalytic hydrogenation the initial H_2 pressure is about 100 atm. and working pressure 100--200 atm., whereas in presence of MoS_3 good results are obtained with initial pressure of 50 atm. A slow rise in temp. accompanies hydrogenation. A liquefying medium is useful in the initial stages. The predominant part of the benzine and the greater part of the kerosene consist of aromatic and naphthenic hydrocarbons, thus appearing to confirm the cyclic nature of the fundamental structural elements of the coal. M. W.

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An investigation of the chemical composition, properties and methods of treatment of primary tars of Cheliabinsk brown coal. II. The composition of the light-tar fraction and the stabilization of benzine by hydrogenation. M. K. D'yakova, A. V. Losovoi and S. I. Chertkova. *Compt. rend. acad. sci. U. R. S. S.* 2, 399-402(1935)(in English 408).—The "benzine" fraction (b. up to 230°) of Cheliabinsk brown coal contains 37.8% of the primary tars. Of this 49.4% consists of phenols and acids, 19.9% of aromatic hydrocarbons (toluene-xylene fraction, 3.8%), 1.3% of naphthenes, 11.4% of paraffins, 17.2% of unsatd. hydrocarbons, 0.8% of N bases. S and neutral O compds. are not detd. The neutral "benzine" fraction consisting of 40% aromatic compds., 34.6% unsatd. compds., 2.7% naphthenes and 22.7% paraffins cannot be freed from S derivs. by the usual means. This and stabilization are achieved by hydrogenation in the presence of MoS_2 or CoS at 100 atm. and 400° for 2 hrs. This decreases the amt. of unsatd. compds. which go largely to naphthenes with CoS and to naphthenes and paraffins with MoS_2. From 80 to 87% of the crude "benzine" is recovered and H_2 absorbed up to 2-4% of charge. The stabilized "benzine" contains 42-8% aromatic compds., 5-17% unsatd. compds., 10-26% naphthenes and 26-30% paraffin hydrocarbons. It is free from S and stable on storage.

R. Baltzly

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

21

Investigating the chemical composition, properties and methods of treating primary tars from Chelyabinsk brown coals. I. Destructive hydrogenation of the primary tar from Chelyabinsk brown coals. A. V. Lozovoi and M. K. D'yakova. *J. Applied Chem.* (U. S. S. R.) **8**, 488-99(in French 500)(1935).—See *C. A.* **29**, 1958'. **II. The chemical composition of the light fraction from the primary tar from Chelyabinsk brown coals and the stabilization of the hydrocarbon part of the "benzine."** M. K. D'yakova, A. V. Lozovoi and S. I. Chertkova. *J. Applied Chem.* (U. S. S. R.) **8**, 695-705(in French 706) (1935).—See *C. A.* **29**, 7045'. A. A. Boehtlingk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

Bc

B-I-2

Composition, properties, and methods of treatment of primary tar of Cheliabinsk brown coal. II. M. K. Diakova, A. V. Losovoi, and E. I. Tschertkova (J. Appl. Chem. Russ., 1936, 9, 695—706; cf. B., 1936, 780).—The benzine fraction of b.p. < 230° contains > 1% of S, not eliminable by the ordinary methods. A stable, S-free product is obtained in 80% yield by catalytic hydrogenation (400°/100 atm.; 2 hr.), whereby the content of aromatic hydrocarbons is unaffected, whilst unsaturated are converted into naphthenic hydrocarbons in presence of CoS, and chiefly into paraffinic hydrocarbons by MoS_2. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

Catalytic high-pressure hydrogenation of benzene homologs. M. K. D'yakova, A. V. Lozovoi and T. G. Stepantsova. *J. Gen. Chem.* (U. S. S. R.) **7**, 722-8 (1937). Hexamethylbenzene (I), pentamethylbenzene (II), 1,2,4,5-tetramethylbenzene (durene) (III), PhPr and *o*-, *m*- and *p*-xylenes when hydrogenated in the presence of NiO catalyst at 200-40° and 120-230 H atm. for 10-20 hrs. formed the corresponding 6-membered naphthenes without a cleavage of Me (Pr) groups. I, II and III resulted from xylenes with MeCl and $AlCl_3$. I, m. 150-60°, was completely hydrogenated after 20 hrs. autoclaving, affording 60% hexamethylcyclohexane (IV), b. 210-16°. It consisted of 2 fractions: b. 210-14°, n_D^{20} 1.4600, d_4^{20} 0.8405, M. R.$_D$ 54.94, mol. wt. 170, $PhNH_2$ point 50.0° and b. 214-16°, n_D^{20} 1.4618, d_4^{20} 0.8451, M. R.$_D$ 54.8, $PhNH_2$ point 56.2°. The product was, probably, a mixt. of *cis*- and *trans*-IV. It differed in its consts. from IV obtained by Dros, *et al.* (*C. A.* **28**, 117) and from the $C_{12}H_{24}$ hydrocarbons isolated by Mabery from various petroleum products. In addn. to IV, about 30% of a lower-boiling fraction (180-210°) was formed, the nature of which is being investigated. II was hydrogenated for the 1st time. It gave 1,2,3,4,5-pentamethylcyclohexane (V) (a new compd.), b_{760} 181-7°. This was sepd. into 2 fractions: b_{760} 181-6°, n_D^{20} 1.4400, d_4^{20} 0.82, M. R.$_D$ 50.35, $PhNH_2$ point 57.3°, and b_{760} 186-7°, n_D^{20} 1.4505, d_4^{20} 0.8214. V consts. differ from those of petroleum pentamethylcyclohexane (b. 180°, d_4^{20} 0.8119) and the product obtained by Stratford (*Ann. combustibles liquides* **4**, 83, 317 (1929)). III, m. 79°, n_D^{20} 1.4864, gave more than 65% tetramethylcyclohexane, b_{760} 160-1.5°, n_D^{20} 1.4371, d_4^{20} 0.7934, $PhNH_2$ point 58.8°, mol. wt. 139, M. R.$_D$ 46.24 (calcd. 46.18). It is identical with the product prepd. by Auwers (*Ann.* **420**, 108). The following naphthenes resulted in nearly theoretical yield (90%). 1,2-Dimethylcyclohexane, b_{760} 122.5-4°, n_D^{20} 1.4288, d_4^{20} 0.7814, $PhNH_2$ point 41.9°. 1,3-Deriv., b_{760} 119.5-20.5°, n_D^{20} 1.424, d_4^{20} 0.7677, $PhNH_2$ point 49.5°. 1,4-Deriv., b_{760} 119.5-20°, n_D^{20} 1.4232, d_4^{20} 0.7669. Propylcyclohexane, b_{760} 154-5°, n_D^{20} 1.4369, d_4^{20} 0.793, $PhNH_2$ point 50.5°.

Chas. Blanc

1C

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

2

cp

Some physical constants of hydrocarbon mixtures. A. V. Lozovoi, M. K. D'yakova and T. G. Stepantseva. J. Gen. Chem. (U. S. S. R.) 7, 1119-32(1937).—Measurements were made of the n_D, sp. gr., d_4^{20} and aniline point of the following systems: C_6H_6-cyclohexane; $C_6H_5CH_3$-methylcyclohexane; o-xylene-1,2-dimethylcyclohexane; m-xylene-1,3-dimethylcyclohexane; p-xylene-1,4-dimethylcyclohexane; mesitylene-1,3,5-trimethylcyclohexane; durol-hydrodurol; pentamethylbenzene-1,2,3,4,5-pentamethylcyclohexane; hexamethylbenzene-1,2,3,4,5,6-hexamethylcyclohexane; $C_6H_5CH_3$-ethylcyclohexane; n-propylbenzene-n-propylcyclohexane; 1-methyl-4-isopropylbenzene-1-methyl-4-isopropylcyclohexane. S. L. Madorsky

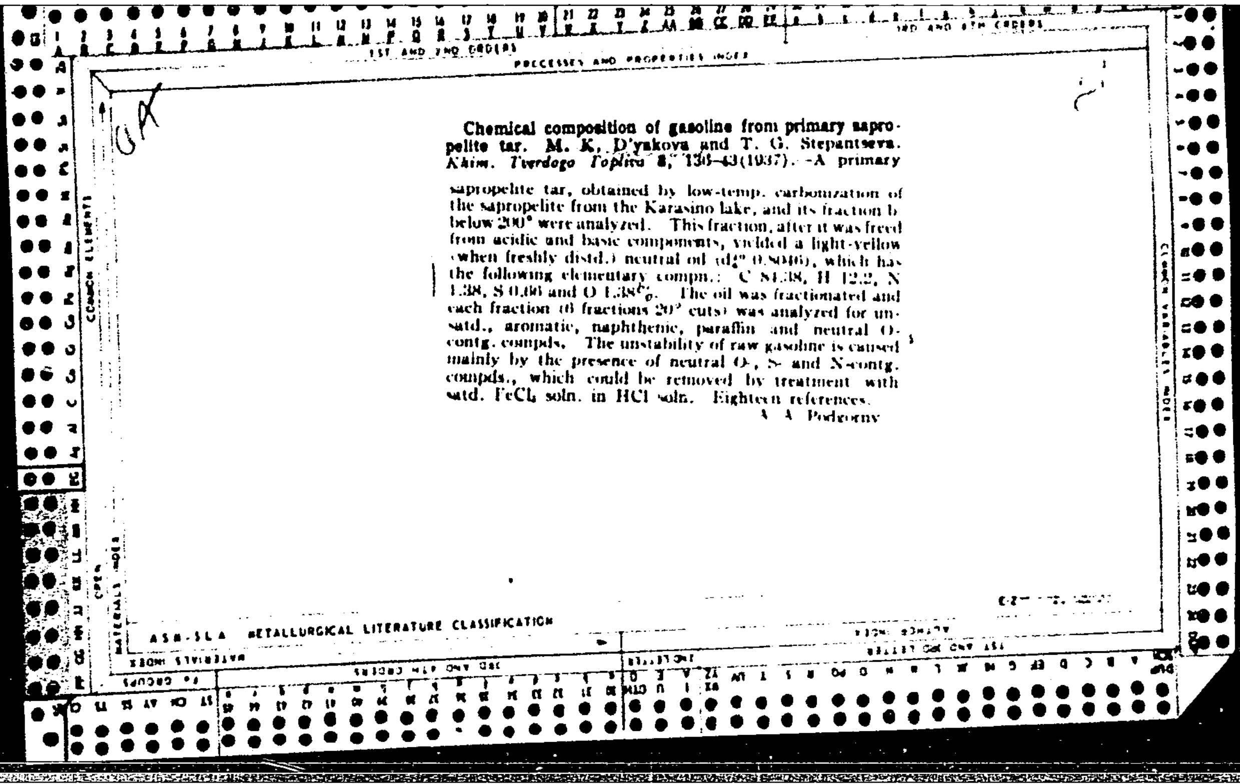
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

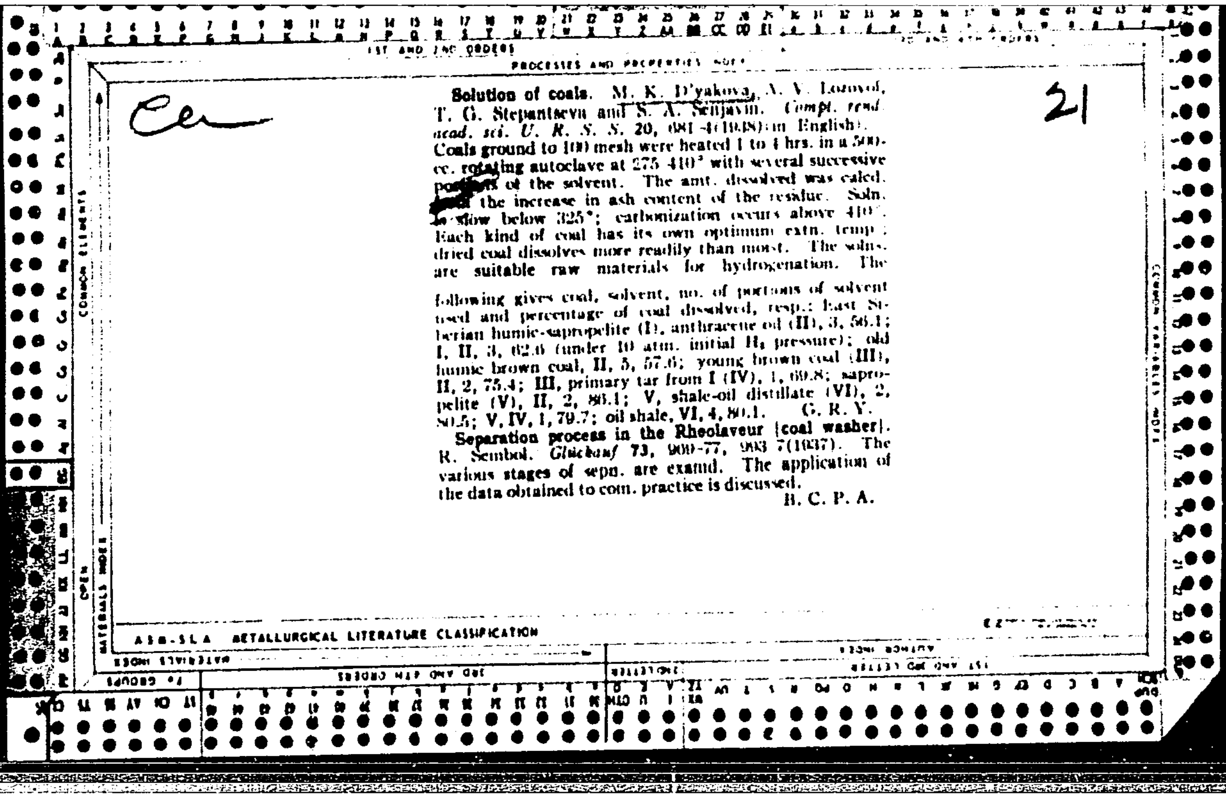
Velocity of hydrogenation of aromatic hydrocarbons. I. A. V. Lozovoi and M. K. Djakova (J. Gen. Chem. Russ., 1937, 7, 2964—2977).—The reactions of hydrogenation of PhMe, *o*-, *m*-, and *p*-xylene, durene, *s*-$C_6H_3Me_3$, C_6HMe_5, PhEt, $PhPr^{\alpha}$, and *p*-$C_6H_4MePr^{\beta}$ ($Ni-Al_2O_3$ catalyst) proceed at const. velocity at 75—230°. At <110° the velocity of hydrogenation of PhMe is independent of the pressure, whilst at 100—200° it is ∝ pressure, over the range 20—140 atm. R. T.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Chemical composition of gasoline from primary sapropelite tar. **M. K. D'yakova** and T. G. Stepantseva. *Khim. Tverdogo Topliva* **8,** 136-43(1937).—A primary sapropelite tar, obtained by low-temp. carbonization of the sapropelite from the Karasino lake, and its fraction b. below 200° were analyzed. This fraction, after it was freed from acidic and basic components, yielded a light-yellow (when freshly distd.) neutral oil (d_4^{20} 0.8046), which has the following elementary compn.: C 84.38, H 12.2, N 1.38, S 0.06 and O 1.38%. The oil was fractionated and each fraction (8 fractions 20° cuts) was analyzed for unsatd., aromatic, naphthenic, paraffin and neutral O-contg. compds. The unstability of raw gasoline is caused mainly by the presence of neutral O-, S- and N-contg. compds., which could be removed by treatment with satd. $FeCl_3$ soln. in HCl soln. Eighteen references.

A. A. Podgorny



1ST AND 2ND ORDERS

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Ce

21

Solution of coals. M. K. D'yakova, A. V. Lozovoi, T. G. Stepantseva and S. A. Senjavin. *Compt. rend. acad. sci. U. R. S. S.* 20, 681-4(1938)(in English). Coals ground to 100 mesh were heated 1 to 4 hrs. in a 500-cc. rotating autoclave at 275-410° with several successive portions of the solvent. The amt. dissolved was calcd. [illegible] the increase in ash content of the residue. Soln. is slow below 325°; carbonization occurs above 410°. Each kind of coal has its own optimum extn. temp.; dried coal dissolves more readily than moist. The solns. are suitable raw materials for hydrogenation. The

following gives coal, solvent, no. of portions of solvent used and percentage of coal dissolved, resp.: East Siberian humic-sapropelite (I), anthracene oil (II), 3, 56.1; I, II, 3, 62.6 (under 10 atm. initial H_2 pressure); old humic brown coal, II, 5, 57.6; young brown coal (III), II, 2, 75.4; III, primary tar from I (IV), 1, 69.8; sapropelite (V), II, 2, 86.1; V, shale-oil distillate (VI), 2, 80.5; V, IV, 1, 79.7; oil shale, VI, 4, 80.1. G. R. Y.

Separation process in the Rheolaveur [coal washer]. R. Sembol. *Glückauf* 73, 909-77, 983-7(1937). The various stages of sepn. are examd. The application of the data obtained to com. practice is discussed.

B. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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BC

2-1

Velocity of hydrogenation of aromatic hydrocarbons. II. Velocity of reaction and structure of hydrocarbons. M. K. Djakova and A. V. Lozovoi (J. Gen. Chem. Russ., 1938, 8, 105—115).—The velocity v of hydrogenation of C_6H_6 homologues at a Ni-Al_2O_3 catalyst (15—230°/35—200 atm.) is expressed by $v = v_0/2^n$, where n is the velocity for C_6H_6. For xylenes, v falls in the order $p- > o- > m$-xylene. The same val. of v is obtained for PhMe, PhEt, and $PhPr^{\alpha}$, but v for $PhPr^{\alpha}$ is > for $PhPr^{\beta}$.

R. T.

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21

Thermal solution of coal and hydrogenation of coal solutions. I. Barzass sapromyxite. M. K. D'yakova, A. V. Lozovoi and V. P. Kardasevich. *J. Applied Chem.* (U. S. S. R.) 12, 545-53 (in French, 554) (1939); cf. C. A. 33, 3561^9.—The soly. of sapromyxite in anthracene oil, primary tar and hydrogenated shale tar was investigated. The optimal conditions for dissolving sapromyxite are: ratio of coal to solvent 30:70, temp. 400-25° and pressure not higher than 20-30 atm.; 94-5% of coal (on the org. mass) is dissolved. The most effective solvent is anthracene oil. The solns. were evapd. under 6 mm. at 200° to 60% concn. and hydrogenated in the presence of 10% MoS_3 at 300-440° under initial H_2 pressure of 100 atm. for 9 hrs. There were obtained oil 60.0, water 1.5, org. residue insol. in C_6H_6 2.4 (before hydrogenation 22%), gas 4.8 and losses 5.0%. The gas contained CO 1.8, H_2 88.2 and C_2H_6 + ... 10.3%. Therefore, about 80% of coal can be transformed

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3RD AND 4TH ORDERS

Catalytic high pressure hydrogenation of benzene homologs. II. M. K. D'yakova and A. V. Lozovoi. *J. Gen. Chem. (U. S. S. R.)* 9, 26-32 (1939); cf. C. A. 31, 5768. The following alkylbenzenes (10-20 g.), prepd. in 25-30% yield by the Wurtz method from the corresponding aryl and alkyl halides by condensation with Na in the absence of a solvent, when autoclaved in the presence of 2 g. of the Ni + Al_2O_3 catalyst (Zelinskii and Kommarevskii, C. A. 18, 2885) at 180-210° and 50 atm. for 1-1.5 hrs. yielded 85-90% of the corresponding cyclohexane homologs without a cleavage of alkyl groups. The resulting naphthenes were freed from any unaltered aromatic compds. with 100% H_2SO_4 and, after washing with NaOH and H_2O and drying, were redistd. over Na. PhBu (from $PhCH_2Cl$ and PrBr), b_{760} 179.80°, d_4^{20} 0.8613, n_D^{20} 1.4907, gave *butylcyclohexane*, b_{745} 177.8°, d_4^{20} 0.7990, n_D^{20} 1.4407, $PhNH_2$ point 50.7°. PhAm (from $PhCH_2CH_2Br$ and PrBr), b_{760} 200-200.5°, d_4^{20} 0.8598, n_D^{20} 1.488, gave *amylcyclohexane*, b_{760} 197-9°, d_4^{20} 0.8044, n_D^{20} 1.4442, $PhNH_2$ point 60.7°. Iso-AmPh (from PhBr and iso-AmBr), b_{745} 195°, d_4^{20} 0.855, n_D^{20} 1.4858, formed *isoamylcyclohexane*, b_{760} 192.5-3°, d_4^{20} 0.8023, n_D^{20} 1.4423, $PhNH_2$ point 61.8°. o-MeC_6H_4Pr (from o-BrC_6H_4Me and PrBr), b_{760} 181.2°, d_4^{20} 0.8747, n_D^{20} 1.4990, gave *1-methyl-2-propylcyclohexane*, b_{760} 171.5-2.5°, d_4^{20} 0.8064, n_D^{20} 1.4437, $PhNH_2$ point 53.6°. The product was, probably, a mixt. of cis and trans isomers. p-MeC_6H_4Pr (from p-ClC_6H_4Me and PrBr), b_{760} 183.4°, d_4^{20} 0.8601, n_D^{20} 1.4924, afforded *1-methyl-4-propylcyclohexane*, b_{760} 168.9°, d_4^{20} [illegible], n_D^{20} 1.4388, $PhNH_2$ point [illegible]. $PhCH_2CH_2Ph$ (from $PhCH_2CH_2Br$ and benzyl bromide), b_{760} 256.9°, d_4^{20} [illegible], n_D^{20} 1.5858, M. R. 63.44, gave *[illegible]*, b_{760} 117-19°, d_4^{20} 0.815, n_D^{20} 1.4507, M. R. 61.68, $PhNH_2$ point 23°. Indene was completely hydrogenated to a mixt. of cis- and trans-[illegible], b_{760} 164.6°, d_4^{20} [illegible], n_D^{20} 1.4641, $PhNH_2$ point 32.2.

Chas. Blanc

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

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2

Some physical constants of hydrocarbon mixtures. II. A. V. Lozovoi, M. K. D'yakova and T. G. Stepantseva. *J. Gen. Chem.* (U. S. S. R.) 9, 540-6(1939); cf. *C. A.* 31, 7304⁸.—The values of n_D^{20}, d_4^{20} and aniline point for the following binary mixts. contg. 80, 60, 40 and 20% of the hydroaromatic compd. are reported: butylbenzene-butylcyclohexane, amylbenzene-amylcyclohexane, octylbutylcyclohexane, amylbenzene-amylcyclohexane, isoamylbenzene-isoamylcyclobenzene-octylcyclohexane, 1,2-methylpropylbenzene-1,2-methylpropylcyclohexane, 1,4-methylpropylbenzene-1,4-methylpropylcyclohexane, hydrindene-octahydrindene and tetralin-decalin. With increase in length of side chain the differences in the properties of the 2 members of the pairs decrease. *o*-Isomers differ from each other more than do the members of the other pairs. Increasing the length of the side chain raises the aniline point about 5° for each C atom.

H. M. Leicester

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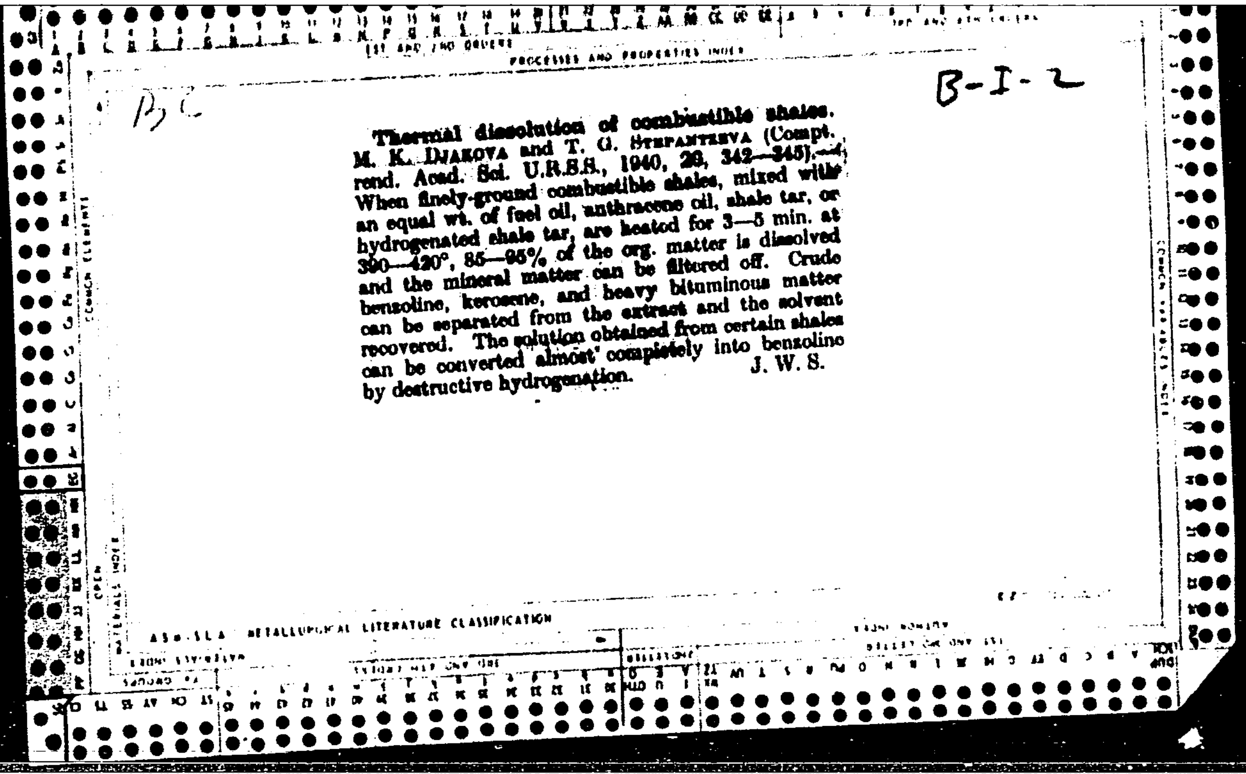
Hydrogenation velocities of aromatic hydrocarbons III. Reaction velocity and structure of hydrocarbons. A. V. Lozovoi and M. K. D'yakova. *J. Gen. Chem.* (U. S. S. R.) 9, 805-904(1939); cf. *C. A.* 32, 5286^{9}, 5287^{1}.—Hydrogenation velocities were detd., with Ni + Al_2O_3 as a catalyst, of a no. of aromatic hydrocarbons to establish the influence of the structure on hydrogenation velocity. A comparison of the hydrogenation velocities of benzene homologs, such as toluene up to octylbenzene, showed that the lengthening of the aliphatic side chain from 1 to 8 C atoms had little influence on the velocity with which H was absorbed by the aromatic ring. The hydrogenation velocities of AmPh, iso-AmPh, *p*-PrC_6H_4Me and *p*-cymene revealed that branching of the side chain did not influence the hydrogenation velocity. *o*-Xylene, tetralin and *o*-PrC_6H_4Me absorb H with the same velocity. From the present and previous expts. it is concluded that neither the length nor the structure of aliphatic side chains exerts any practical influence on H absorption by the benzene nucleus in the presence of a Ni catalyst. The hydrogenation velocity is, however, influenced by the no. of substituents present in the benzene nucleus, e. g., the absorption of H becomes more difficult with an increasing no. of substituents. Gertrude Berend

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



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B, C

B-I-2

Thermal dissolution of combustible shales. M. K. Djakova and T. G. Stepantseva (Compt. rend. Acad. Sci. U.R.S.S., 1940, 28, 342—345).—When finely-ground combustible shales, mixed with an equal wt. of fuel oil, anthracene oil, shale tar, or hydrogenated shale tar, are heated for 3—5 min. at 390—420°, 85—95% of the org. matter is dissolved and the mineral matter can be filtered off. Crude benzoline, kerosene, and heavy bituminous matter can be separated from the extract and the solvent recovered. The solution obtained from certain shales can be converted almost completely into benzoline by destructive hydrogenation. J. W. S.

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22

High-temperature extraction and cracking of Udovax shale. M. K. D'yakova and V. P. Kardasevich. *J. Applied Chem.* (U. S. S. R.) 13, 122-31(in French, 131) (1040).—Org. substances of shale were dissolved in mazut, anthracene oil, primary tar and its hydrogenation product, "schist soln." or in fractions sepd. from "schist solns.," by heating at 400-30° for 3-5 min. in a rotary autoclave. The optimum ratio of shale: solvent was 50:50 or 60:40. During the process of thermal soln., the org. substance of shale was converted into gasoline (35-40%), kerosene plus a heavy asphalt-like product (35-40%) and gas (5-10% of total amt. of org. substance). The heavy residue, amounting to about 40%, can be destructively hydrogenated to yield gasoline; this increases the total yield of motor fuel to 75%.

A. A. Podgorny

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CA

2

Velocity of reduction of phenols. I. Monatomic phenols. V. I. Bobyshev, M. K. D'yakova and A. V. Lozovoi. *J. Applied Chem.* (U. S. S. R.) 13, 942-50 (in French, 950) (1940).—The method previously described (somewhat modified) (cf. L. and D., *C. A.* 32, 5286^4) was used to det. the velocity of reduction of PhOH, *o*-, *m*- and *p*-MeC_6H_4OH, 3,4-, 3,5- and 2,4-xylen-1-ol (b. 211-2.5°, m. 65.5° and m. 64°, resp.), thymol, carvacrol, α- and β-naphthol and thiophenol, at 350°, under an initial H pressure of 81 atm. in the presence of MoS_2 catalyst. The reduction of phenols was the main reaction under the above conditions, the side reactions of hydrogenation of the benzene ring (leading to the formation of naphthenes and naphthylenes) were slight. The following relative velocities (in mols.) of reduction of the phenols (in the order named) were obtained: PhOH 100, 60.8, 108, 126, 65.2, 66.5, 70.2 (tentative), 65.8, 44.9, 160, 208 and 2845, resp. Increase of H pressure considerably increased the velocity of reduction of phenol and hydrogenation of the ring. The temp. coeff. of velocity of reduction of phenol at 350-400° was approx. 1.30-1.40. The products of reduction of phenols under the exptl. conditions were: aromatic compds. 87-98, naphthenes 0.6-9.6, and naphthylenes 0-4.1%. About 85 references. A. A. P.

2

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22

High-temperature extraction and cracking of combustible shale. II. The River Volga shale of the "Obshchii Syrt" deposit. M. K. D'yakova and T. G. Stepantseva. *J. Applied Chem.* (U. S. S. R.) 13, 1045-52(in French, 1052)(1940); cf. *C. A.* 34, 5642^{2}, 8230^{1}.—A previously described method was used for the high-temp. extn. and cracking of the shale. Heating the mixt. of shale and solvent (Ishimbaev residuum or anthracene oil) for 5-10 min. at 300° dissolved 75-80% of the org. substances of the shale and 10-15% of the shale was transformed into gas and water. In the thermal transformations (because of partial decompn.) 35-40% of the org. substances were made into gasoline, 30-40% into kerosene and asphalt-like residue. Gasoline and kerosene have to be carefully rectified, while the asphalt-like residue could be used in *road building*. The method was much better than other known methods for this shale. A. A. Podgorny

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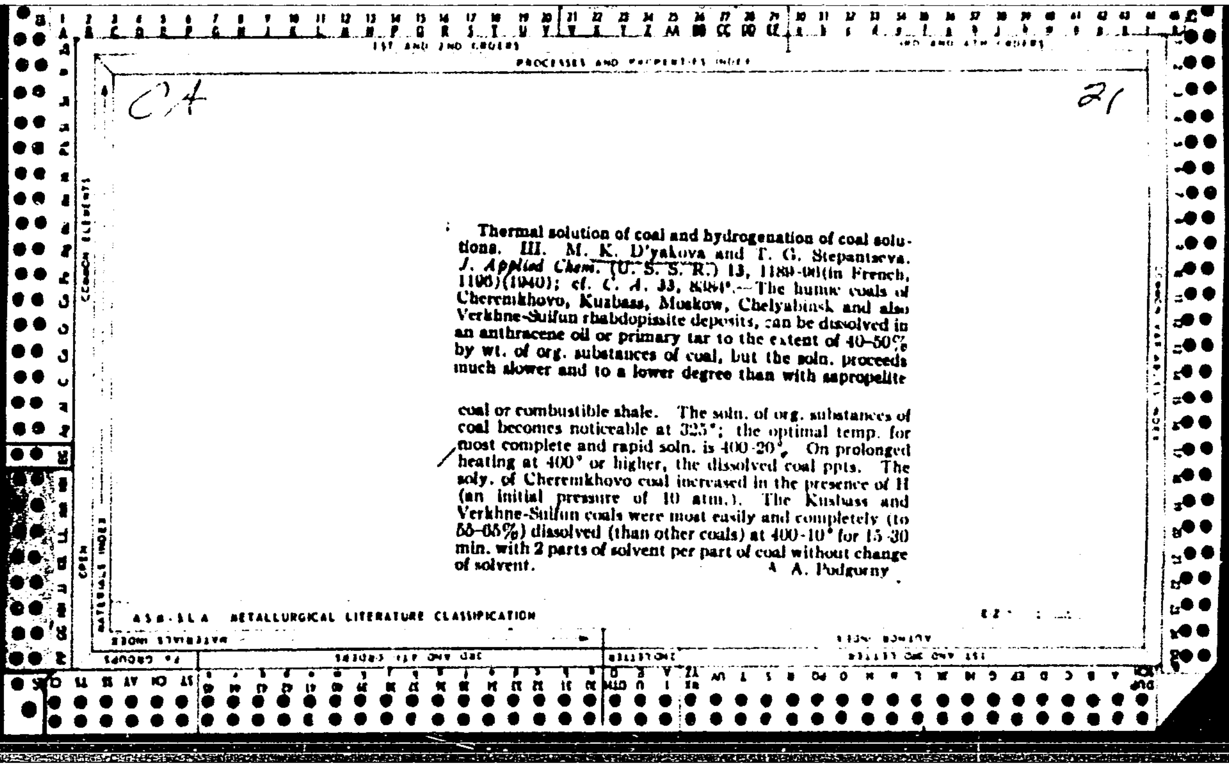
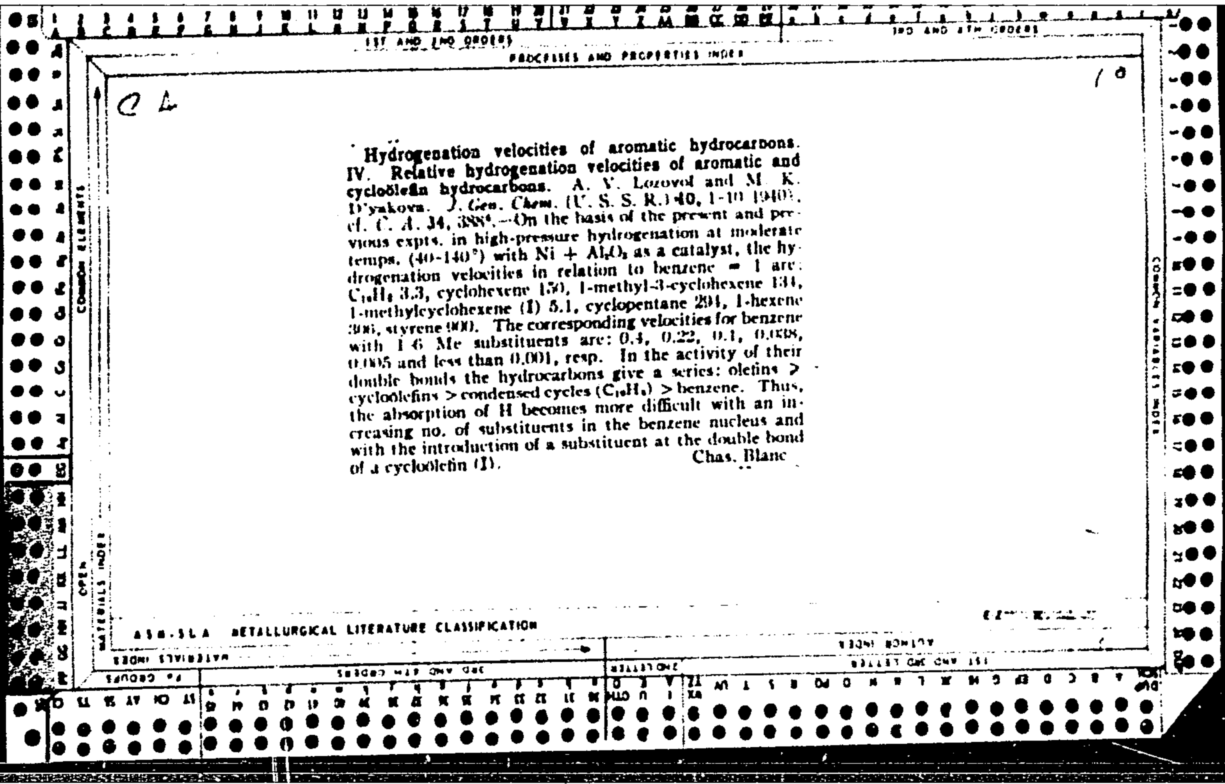


C4

21

Thermal solution of coal and hydrogenation of coal solutions. III. M. K. D'yakova and T. G. Stepantseva. *J. Applied Chem.* (U. S. S. R.) 13, 1189-90(in French, 1190)(1940); cf. *C. A.* 33, 8084°.—The humic coals of Cheremkhovo, Kuzbass, Moskow, Chelyabinsk and also Verkhne-Sulfun rhabdopissite deposits, can be dissolved in an anthracene oil or primary tar to the extent of 40-50% by wt. of org. substances of coal, but the soln. proceeds much slower and to a lower degree than with sapropelite coal or combustible shale. The soln. of org. substances of coal becomes noticeable at 325°; the optimal temp. for most complete and rapid soln. is 400-20°. On prolonged heating at 400° or higher, the dissolved coal ppts. The soly. of Cheremkhovo coal increased in the presence of H (an initial pressure of 10 atm.). The Kuzbass and Verkhne-Sulfun coals were most easily and completely (to 55-65%) dissolved (than other coals) at 400-10° for 15-30 min. with 2 parts of solvent per part of coal without change of solvent.

A. A. Podgorny

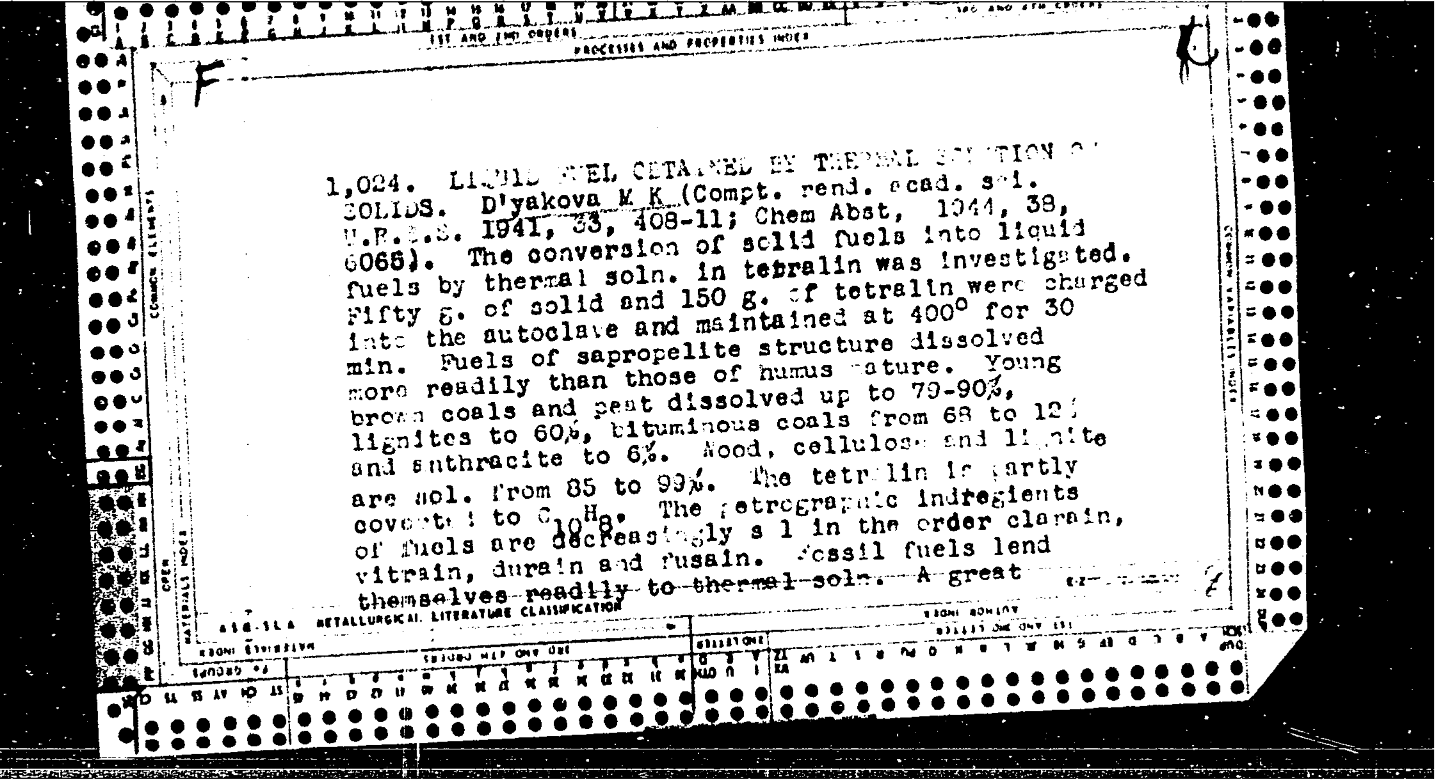


C A

10

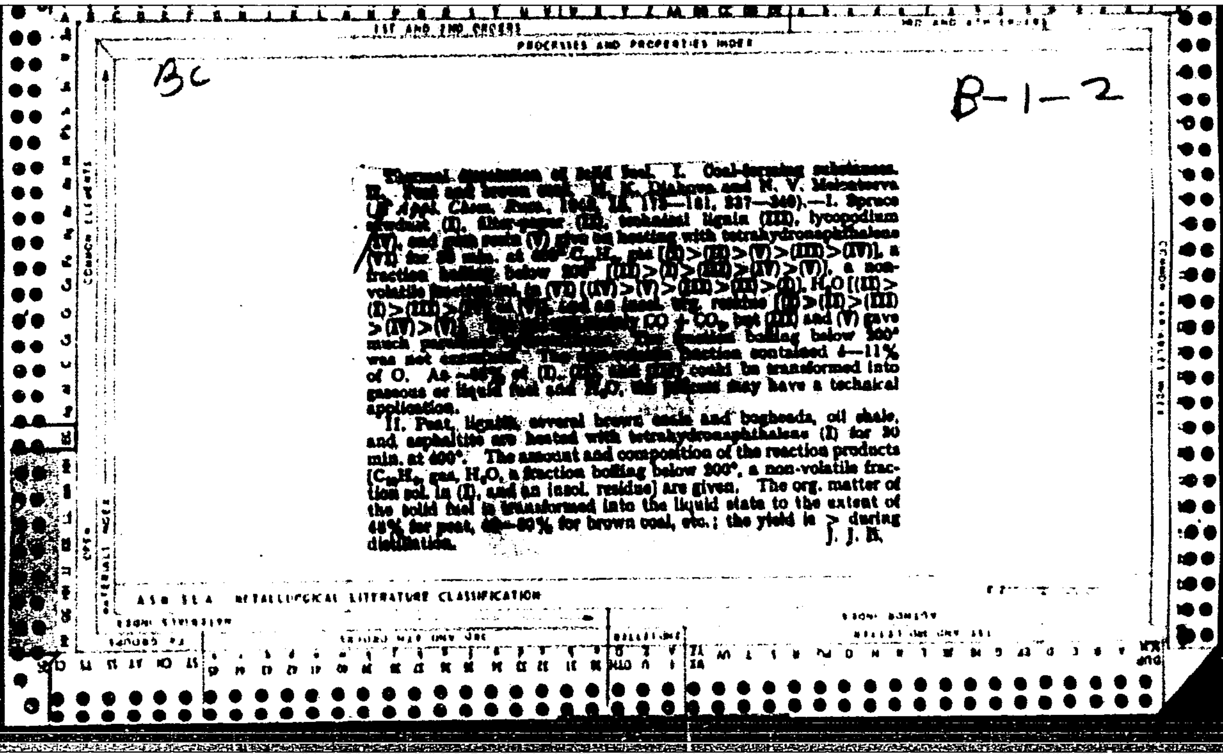
Hydrogenation velocities of aromatic hydrocarbons. IV. Relative hydrogenation velocities of aromatic and cycloölefin hydrocarbons. A. V. Lozovoi and M. K. D'yakova. *J. Gen. Chem.* (U. S. S. R.) 10, 1-10(1940); cf. *C. A.* 34, 388⁴.—On the basis of the present and previous expts. in high-pressure hydrogenation at moderate temps. (40-140°) with Ni + Al_2O_3 as a catalyst, the hydrogenation velocities in relation to benzene = 1 are: $C_{10}H_8$ 3.3, cyclohexene 150, 1-methyl-3-cyclohexene 134, 1-methylcyclohexene (I) 5.1, cyclopentane 294, 1-hexene 996, styrene 900. The corresponding velocities for benzene with 1-6 Me substituents are: 0.4, 0.22, 0.1, 0.008, 0.005 and less than 0.001, resp. In the activity of their double bonds the hydrocarbons give a series: olefins > cycloölefins > condensed cycles ($C_{10}H_8$) > benzene. Thus, the absorption of H becomes more difficult with an increasing no. of substituents in the benzene nucleus and with the introduction of a substituent at the double bond of a cycloölefin (I).

Chas. Blanc



1,024. LIQUID FUEL OBTAINED BY THERMAL SOLUTION OF
SOLIDS. D'yakova M K (Compt. rend. acad. sci.
U.R.S.S. 1941, 33, 408-11; Chem Abst, 1944, 38,
6066). The conversion of solid fuels into liquid
fuels by thermal soln. in tetralin was investigated.
Fifty g. of solid and 150 g. of tetralin were charged
into the autoclave and maintained at 400° for 30
min. Fuels of sapropelite structure dissolved
more readily than those of humus nature. Young
brown coals and peat dissolved up to 79-90%,
lignites to 60%, bituminous coals from 68 to 12%
and anthracite to 6%. Wood, cellulose and lignite
are sol. from 85 to 99%. The tetralin is partly
coverted to $C_{10}H_8$. The petrographic indregients
of fuels are decreasingly sol in the order clarain,
vitrain, durain and fusain. Fossil fuels lend
themselves readily to thermal soln. A great

proportion of the org. matter in the solid fuels is converted to the liquid state and is 2-5 times that obtained by low-temp. carbonization.



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Bc

B-1-2

Thermal dissolution of solid fuel. I. Coal-forming substances. II. Peat and brown coals. M. K. Diakova and N. V. Melentieva (*J. Appl. Chem. Russ.*, 1946, **19**, 173—181, 337—340).—I. Spruce sawdust (I), filter-paper (II), technical lignin (III), lycopodium (IV), and pine resin (V) give on heating with tetrahydronaphthalene (VI) for 30 min. at 400° C_nH_m gas [(I)>(II)>(V)>(III)>(IV)], a fraction boiling below 200° [(III)>(I)>(II)>(IV)>(V)], a non-volatile fraction sol. in (VI) [(IV)>(V)>(III)>(II)>(I)], H_2O [(II)>(I)>(III)>[illegible] and an insol. org. residue [(II)>(I)>(III)>(IV)>(V)] [illegible] $CO + CO_2$, but (III) and (V) gave much [illegible] boiling below 200° was not [illegible] fraction contained 4—11% of O. As [illegible] of (I), [illegible] could be transformed into gaseous or liquid fuel and H_2O, the process may have a technical application.

II. Peat, lignite, several brown coals and bogheads, oil shale, and asphaltite are heated with tetrahydronaphthalene (I) for 30 min. at 400°. The amount and composition of the reaction products [C_nH_m gas, H_2O, a fraction boiling below 200°, a non-volatile fraction sol. in (I), and an insol. residue] are given. The org. matter of the solid fuel is transformed into the liquid state to the extent of 48% for peat, [illegible]—80% for brown coal, etc.; the yield is > during distillation.

J. J. B.

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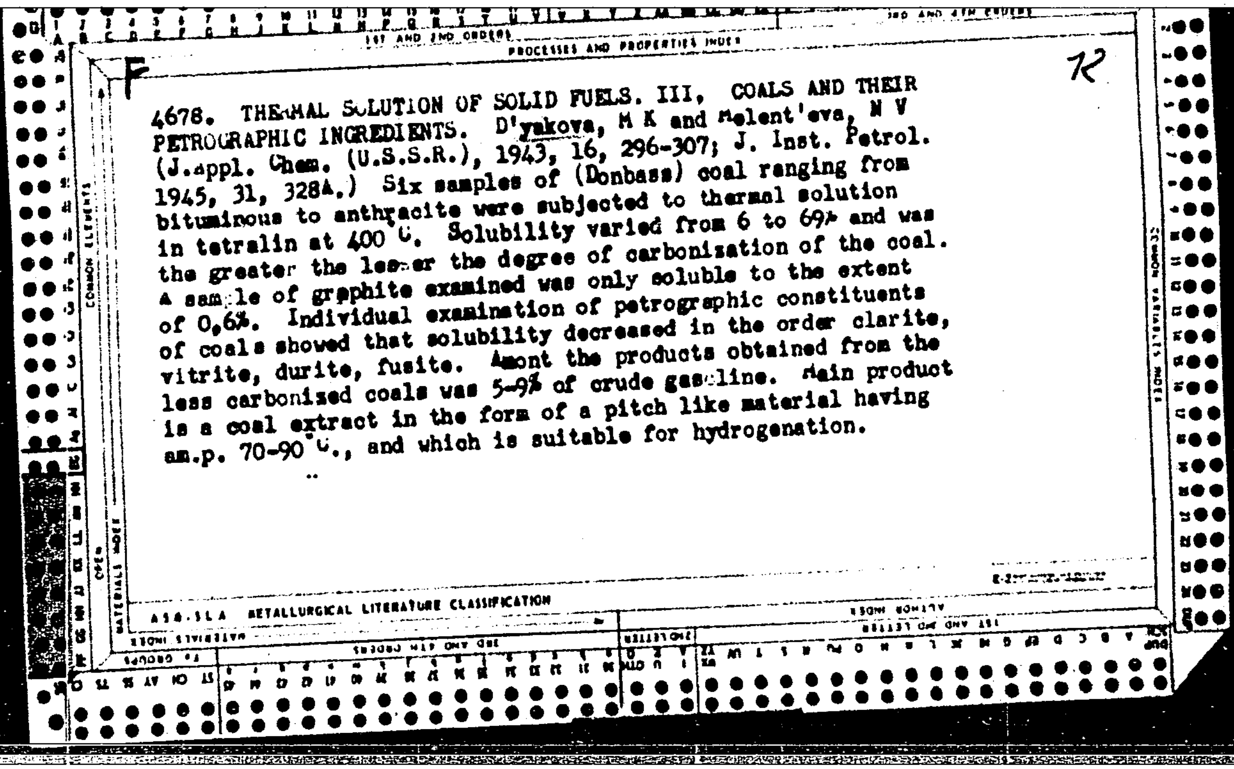

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F

R

4678. THERMAL SOLUTION OF SOLID FUELS. III, COALS AND THEIR
PETROGRAPHIC INGREDIENTS. D'yakova, M K and Melent'eva, N V
(J. appl. Chem. (U.S.S.R.), 1943, 16, 296-307; J. Inst. Petrol.
1945, 31, 328A.) Six samples of (Donbass) coal ranging from
bituminous to anthracite were subjected to thermal solution
in tetralin at 400°C. Solubility varied from 6 to 69% and was
the greater the lesser the degree of carbonization of the coal.
A sample of graphite examined was only soluble to the extent
of 0,6%. Individual examination of petrographic constituents
of coals showed that solubility decreased in the order clarite,
vitrite, durite, fusite. Amont the products obtained from the
less carbonized coals was 5-9% of crude gasoline. Main product
is a coal extract in the form of a pitch like material having
am.p. 70-90°C., and which is suitable for hydrogenation.

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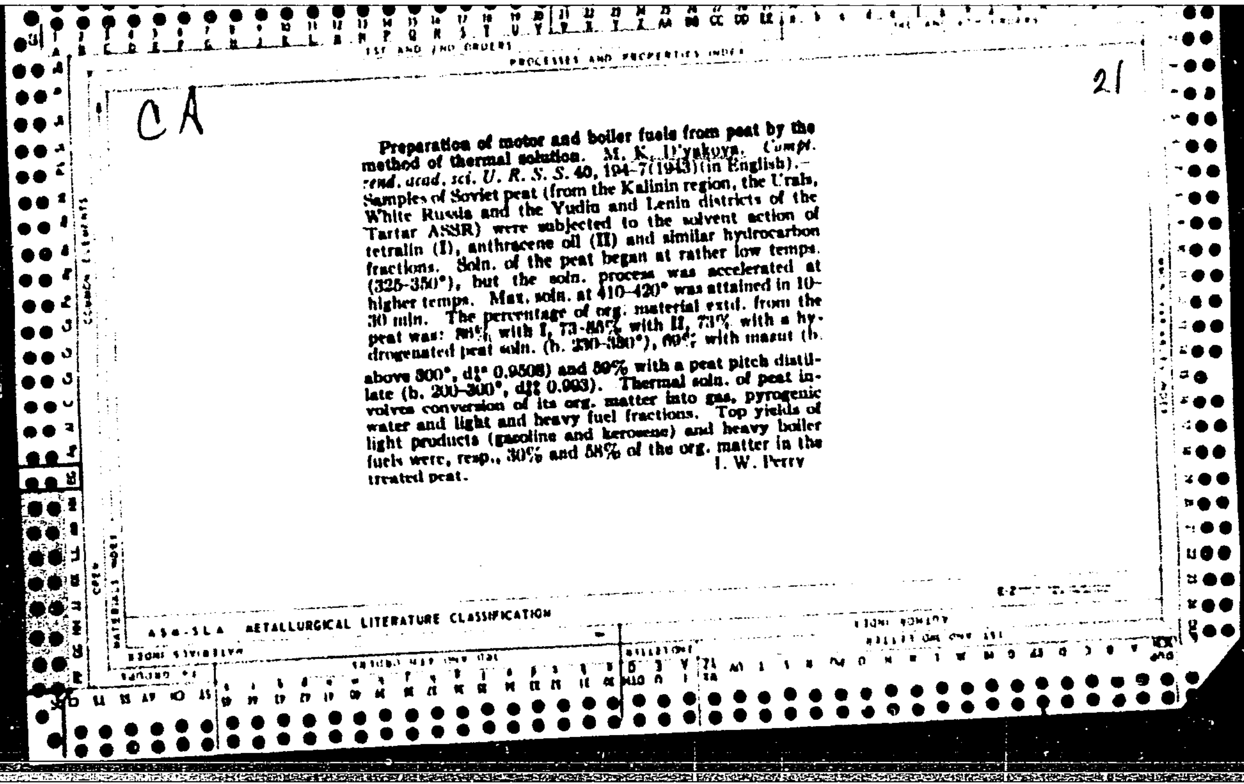


CA

21

Preparation of motor and boiler fuels from peat by the method of thermal solution. M. K. D'yakova. *Compt. rend. acad. sci. U. R. S. S.* **40**, 194-7(1943)(in English).—Samples of Soviet peat (from the Kalinin region, the Urals, White Russia and the Yudin and Lenin districts of the Tartar ASSR) were subjected to the solvent action of tetralin (I), anthracene oil (II) and similar hydrocarbon fractions. Soln. of the peat began at rather low temps. (325-350°), but the soln. process was accelerated at higher temps. Max. soln. at 410-420° was attained in 10-30 min. The percentage of org. material extd. from the peat was: 86% with I, 73-85% with II, 73% with a hydrogenated peat soln. (b. 230-350°), 60% with masut (b. above 300°, d^{20}_{4} 0.9508) and 89% with a peat pitch distillate (b. 200-300°, d^{20}_{4} 0.993). Thermal soln. of peat involves conversion of its org. matter into gas, pyrogenic water and light and heavy fuel fractions. Top yields of light products (gasoline and kerosene) and heavy boiler fuels were, resp., 30% and 58% of the org. matter in the treated peat. I. W. Perry

Institute of Mineral Fuels, Acad. of Sci., USSR
(-1942-)

"Obtaining Liquid Fuel from Oil Shale by Means of Thermal Dissolving." Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, Nos. 4-5, 1944

BR-52059019

D'YAKOVA, M. K.

Institute of Mineral Fuels, Academy of Sciences
USSR (-1944)

"Thermal Dissolving--A Method of Obtaining
Synthetic Liquid Fuel"
Iz. Ak. Nauk. SSSR Otdel. Tekh. Nauk
Nos. 7-8, 1944

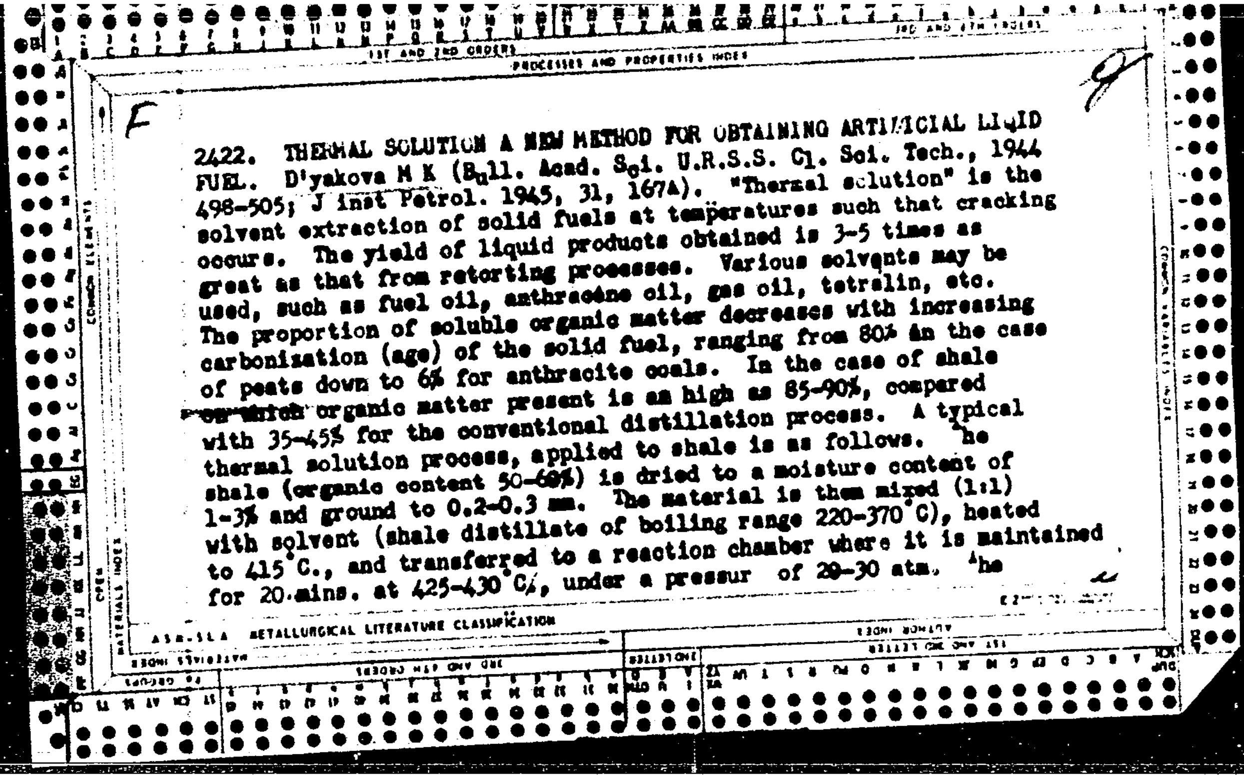
BR52059019

D'YAKOVA, M. K., and TSITRON, I. L.

Laboratory of Hydrogenation, Institute of Mineral Fuels, Academy of Sciences, USSR
(-1944-)

"Thermal Dissolving of Sadkin Asphaltites as a Method for Obtaining Synthetic Liquid Fuel". Iz. Ak. Nauk. SSSR. Otdel. Tekh. Nauk. Nos. 10-11, 1944.

BR-52059019



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9

F

2422. THERMAL SOLUTION A NEW METHOD FOR OBTAINING ARTIFICIAL LIQUID
FUEL. D'yakova M K (Bull. Acad. Sci. U.R.S.S. Cl. Sci. Tech., 1944
498-505; J inst Petrol. 1945, 31, 167A). "Thermal solution" is the
solvent extraction of solid fuels at temperatures such that cracking
occurs. The yield of liquid products obtained is 3-5 times as
great as that from retorting processes. Various solvents may be
used, such as fuel oil, anthracene oil, gas oil, tetralin, etc.
The proportion of soluble organic matter decreases with increasing
carbonization (age) of the solid fuel, ranging from 80% in the case
of peats down to 6% for anthracite coals. In the case of shale
~~on which~~ organic matter present is as high as 85-90%, compared
with 35-45% for the conventional distillation process. A typical
thermal solution process, applied to shale is as follows. The
shale (organic content 50-60%) is dried to a moisture content of
1-3% and ground to 0.2-0.3 mm. The material is then mixed (1:1)
with solvent (shale distillate of boiling range 220-370° C), heated
to 415° C., and transferred to a reaction chamber where it is maintained
for 20 mins. at 425-430° C., under a pressure of 20-30 atm. The

COMMON ELEMENTS

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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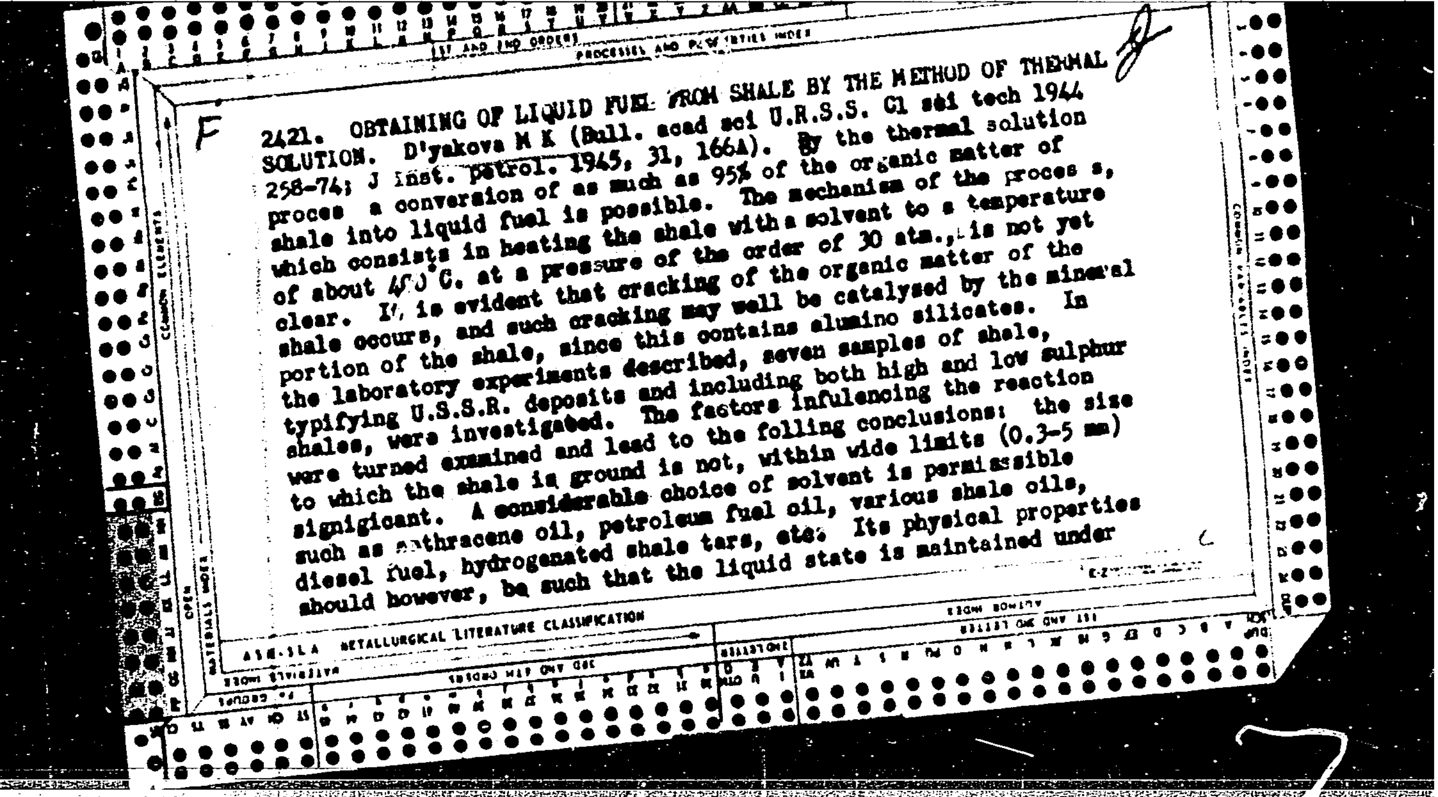
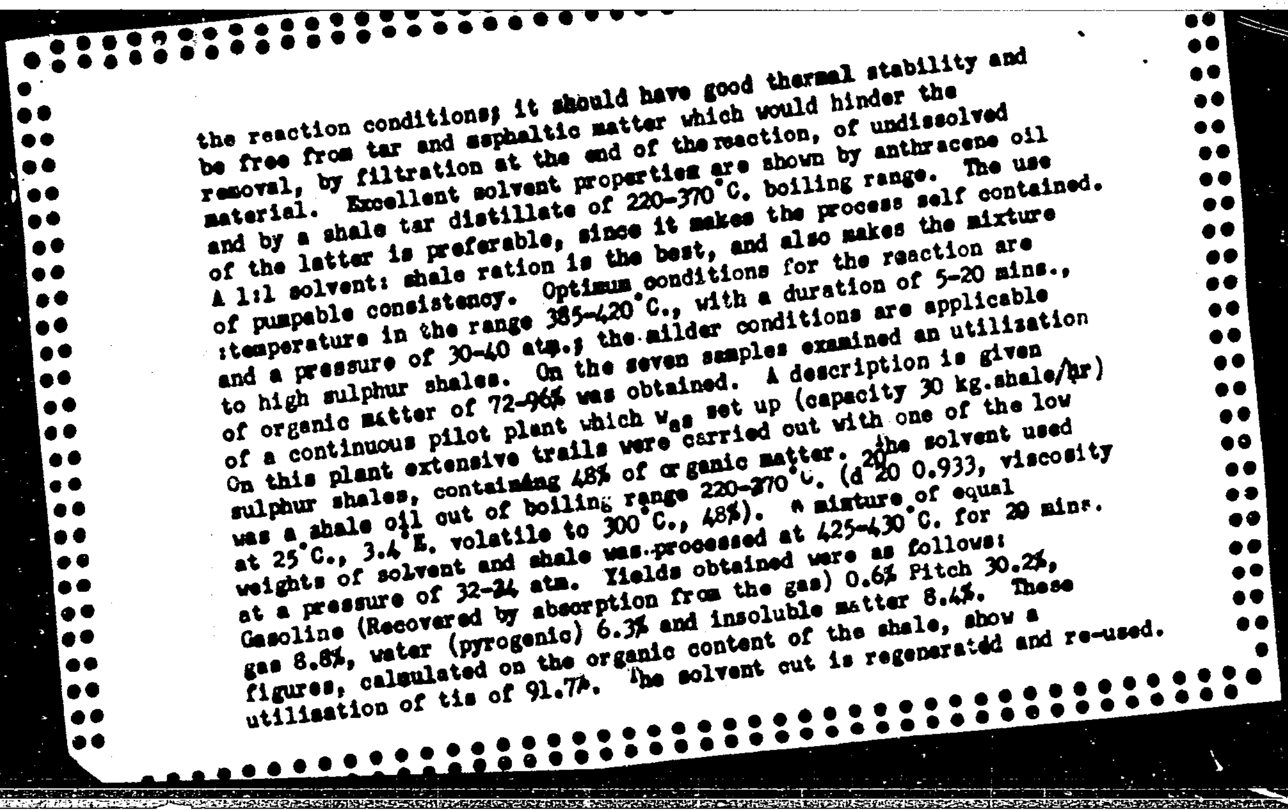
reaction product is freed from gas and products boiling below 225°C. and is then filtered to remove undissolved material. Typical yields (wt) are gasoline (to 225°C.) 20%, casinghead gasoline 0.3% diesel fuel 1.5%, gas 4.5% tar, 15%. Hydrogenation of the latter will yield a further 12% of gasoline (figures are on origional shale containing approximately 50% of organic matter]. The process is particularly applicable to pear. Usint petroleum fuel oil as solvent (1:2) a conversion of 45% of the organic content of peat into gasoline/kerosene fractions is possible.



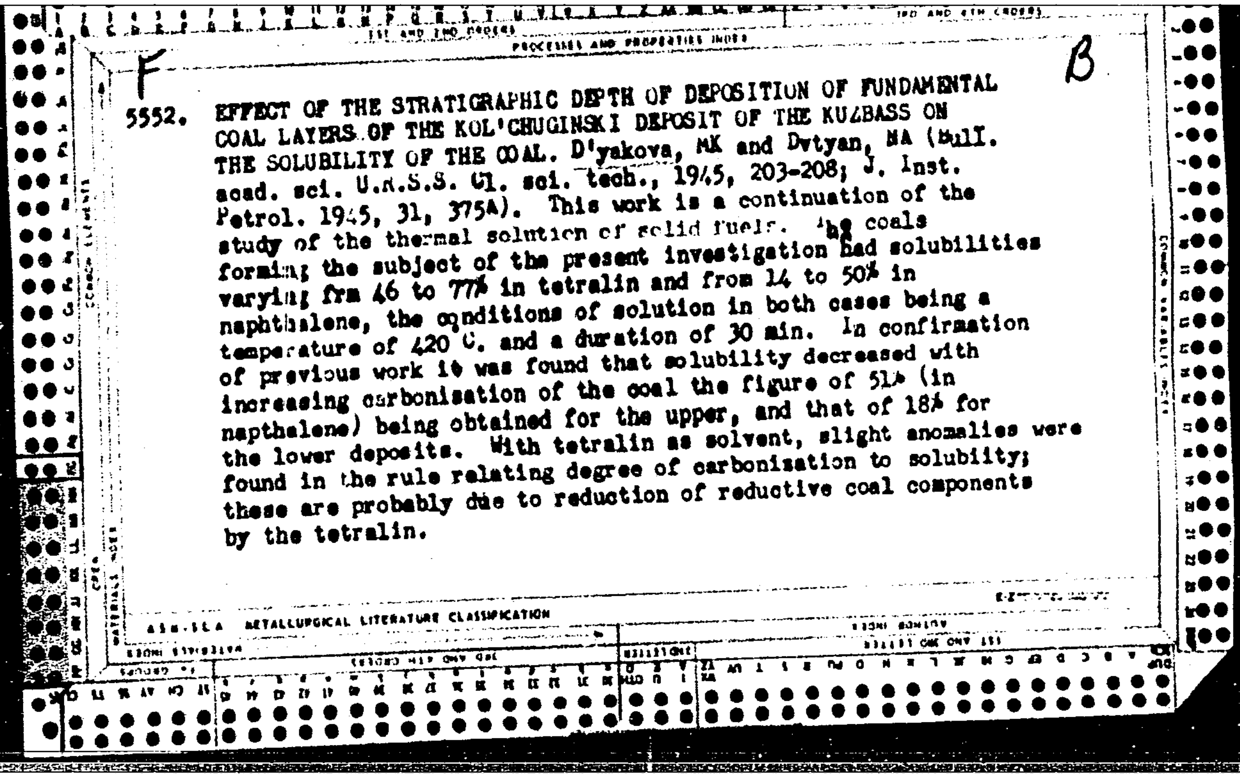
F

2421. OBTAINING OF LIQUID FUEL FROM SHALE BY THE METHOD OF THERMAL
SOLUTION. D'yakova M K (Bull. acad sci U.R.S.S. Cl sci tech 1944
258-74; J inst. petrol. 1945, 31, 166A). By the thermal solution
proces a conversion of as much as 95% of the organic matter of
shale into liquid fuel is possible. The mechanism of the proces s,
which consists in heating the shale with a solvent to a temperature
of about 400 C. at a pressure of the order of 30 atm., is not yet
clear. It is evident that cracking of the organic matter of the
shale occurs, and such cracking may well be catalysed by the mineral
portion of the shale, since this contains alumino silicates. In
the laboratory experiments described, seven samples of shale,
typifying U.S.S.R. deposits and including both high and low sulphur
shales, were investigated. The factors infulencing the reaction
were turned examined and lead to the folling conclusions: the size
to which the shale is ground is not, within wide limits (0.3-5 mm)
signigicant. A considerable choice of solvent is permissible
such as anthracene oil, petroleum fuel oil, various shale oils,
diesel fuel, hydrogenated shale tars, etc. Its physical properties
should however, be such that the liquid state is maintained under

c



the reaction conditions; it should have good thermal stability and be free from tar and asphaltic matter which would hinder the removal, by filtration at the end of the reaction, of undissolved material. Excellent solvent properties are shown by anthracene oil and by a shale tar distillate of 220-370°C. boiling range. The use of the latter is preferable, since it makes the process self contained. A 1:1 solvent: shale ration is the best, and also makes the mixture of pumpable consistency. Optimum conditions for the reaction are :temperature in the range 385-420°C., with a duration of 5-20 mins., and a pressure of 30-40 atm.; the milder conditions are applicable to high sulphur shales. On the seven samples examined an utilization of organic matter of 72-96% was obtained. A description is given of a continuous pilot plant which was set up (capacity 30 kg.shale/hr) On this plant extensive trails were carried out with one of the low sulphur shales, containing 48% of organic matter. The solvent used was a shale oil cut of boiling range 220-370°C. (d^{20}_{20} 0.933, viscosity at 25°C., 3.4°E. volatile to 300°C., 48%). A mixture of equal weights of solvent and shale was processed at 425-430°C. for 20 mins. at a pressure of 32-34 atm. Yields obtained were as follows: Gasoline (Recovered by absorption from the gas) 0.6% Pitch 30.2%, gas 8.8%, water (pyrogenic) 6.3% and insoluble matter 8.4%. These figures, calsulated on the organic content of the shale, show a utilisation of tis of 91.7%. The solvent cut is regeneratdd and re-used.



1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

F

B

5552. EFFECT OF THE STRATIGRAPHIC DEPTH OF DEPOSITION OF FUNDAMENTAL
COAL LAYERS OF THE KOL'CHUGINSKI DEPOSIT OF THE KUZBASS ON
THE SOLUBILITY OF THE COAL. D'yakova, MK and Dvtyan, MA (Bull.
acad. sci. U.R.S.S. Cl. sci. tech., 1945, 203-208; J. Inst.
Petrol. 1945, 31, 375A). This work is a continuation of the
study of the thermal solution of solid fuels. The coals
forming the subject of the present investigation had solubilities
varying frm 46 to 77% in tetralin and from 14 to 50% in
naphthalene, the conditions of solution in both cases being a
temperature of 420 C. and a duration of 30 min. In confirmation
of previous work it was found that solubility decreased with
increasing carbonisation of the coal the figure of 51% (in
napthalene) being obtained for the upper, and that of 18% for
the lower deposits. With tetralin as solvent, slight anomalies were
found in the rule relating degree of carbonisation to solubility;
these are probably due to reduction of reductive coal components
by the tetralin.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

B

Thermal Solution of Sadki Asphaltites as a Method of Preparation of Artificial Liquid Fuel. M. K. D'yakova and I. L. Taitron. *U.O.P. Library Bulletin of Abstracts*, v. 21, Aug. 14, 1946, p. 129. Abstracted from *Bull. Acad. Sci. USSR, Classe des Sciences Techniques*, 1944, p. 740-744.

Asphaltite used in the process was a product of polymerization, condensation and oxidation of heavy oils which contained no light fractions. Because of the difficulty of destructive hydrogenation on an industrial scale, the asphaltite was processed by thermal solution for the extraction of vanadium from the ash and conversion of the organic substance into liquid fuel.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

D'YAKOVA, M.K.

7

USSR.

608. Chemical composition of gasoline obtained by thermal solution of Estonian oil shales. M. K. D'yakova and N. A. Davtyan. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk*, 1954, (9), 124–44.—Gasoline (E.P. 200° C) from thermal soln (*cf* Abs. **521**, 1945) at 430° C, ½ hr in autoclave, of shale with 60·6% org content, using 200°–325° C shale oil cut as solvent. Detailed analysis of narrow cuts; $KMnO_4$ oxidn of unsat and identification of resultant fatty acids; chromatographic separation of aromatics followed by chem and spectral identification; cat dehydrogenation for detection of 6-membered naphthenes; fractionation and Raman spectra for identification of paraffins and 5-membered naphthenes. List of 37 identified hydrocarbons is given; from such detailed analysis composition is calculated (%) as: unsaturated (including S compounds) 15, aromatics 17, 6-membered naphthenes 9, 5-membered naphthenes 15, *n*-paraffins 36, *iso*paraffins 8.

V. B.

Subject : USSR/Chemistry AID P - 1579

Card 1/1 Pub. 152 - 9/21

Authors : D'yakova, M. K. and Surovtseva, V. V.

Title : Effect of the fraction composition of solvents on the solubility of "humus" and sapropelic coals. Part V.

Periodical : Zhur. prikl. khim., 28, no.1, 65-70, 1955

Abstract : Benzene, toluene, xylene, naphthalene, and five fractions of anthracene oil were used as solvents in experiments with "humus" coal at 400°C and with boghead at 420°C. The dissolution of the coal depends on the chemical composition of the solvent, whether the solvent is used in liquid or gaseous state. Three tables. 11 references (5 Russian: 1937-48)

Institution: Institute of Mineral Fuels of the Academy of Sciences of the USSR

Submitted : F 7, 1953

[illegible]

Purification by the hydrogenation method [illegible] ters and products of thermal solution [illegible] N. A. [illegible]akova, A. B. [illegible] Epshtein, [illegible] D. I. Vlsu'chikova. Khim. i Tekhn. [illegible] 9, 44-51.—The hydrogenation was carried [illegible] reaction vessels at 100 atm pressure. The 1st vessel contained 25 ml. of catalyst WS₂ + NiS [illegible]

Recovery of motor fuel, chemical products, and [illegible] the gas-producing tar of Baltic oil shales. [illegible]
A. B. Vol-Epshtein, L. S. Severova, and [illegible]
[illegible] Tekhnol. Topliva [illegible] 1957 [illegible]

[illegible] for the treatment of Baltic oil shales [illegible] process [illegible] cracking up to the coking stage [illegible] the intermediate fraction [illegible] Mo [illegible] and the ext[illegible] refined [illegible] hydrogen [illegible] in the second [illegible] [illegible]

27

9

Hydrogenation refining at low hydrogen pressures of thermal-solution and semicoking gasoline from Estonian shale. M. K. Dyakova, A. B. Vol'-Epshtein, G. A. Alekseeva, and E. I. Vasil'chikova. *Zhur. Priklad. Khim.* 30, 1058-65 (1957); cf. *C.A.* 51, 3207*c*.—Semicoking (I) and thermal-soln. (II) gasolines from Estonian shale were hydrogenated in a continuous process over the catalysts WS_2-NiS-Al_2O_3, WS_2, and WS_2-Al silicate (cf. Lozovoi, *et al.*, *C.A.* 49, 10717*e*). At 100-atm. pressure at a space rate of 1.2 l./l. catalyst/hr. and a H rate of 1400 l./l. feed/hr., the rate of desulfurization and the rate of removing unsaturates vs. temp. were practically parallel curves, the rate rising rather sharply from 250 to 350° and rapidly approaching a const. value at 400°, producing gasolines with an octane no. of 70 (with WS_2). Increasing the feed rate from 1.2 to 3.0 l./l. catalyst/hr. increased the yield from 94.2 to 97.4% and lowered the octane no. from 66 to 61. Increasing the mol. ratio of feed to H from 1:4.6 to 1:8 or the pressure from 10 to 100 atm. had only a slight effect on the degree of refining. The compn. of gasolines obtained from I and II at 400° was: alkynes 1.6, 0.6; alkanes 60.5, 57.9; cycloalkanes 27.2, 32.2; aromatics 4.7, 9.3%. II required less H, had a higher octane no., and a lower tendency towards coking. No deterioration of the catalyst was noted after 30 days of continuous service.

I. Bencowitz

DYAKOVA, M.K.,

"New Methods of Treatment by the Hydrogenation of Coal Tars in Order to Obtain Chemical Products and Automobile Fuels,"
paper submitted for the 1st National Congress. Czechoslovak Scientific Technical Society for Fuel Utilization. Karlovy Vary. Czechoslovakia, 12-17 May 58.

D'YAKOVA, M. K

65-2-11/12

AUTHORS: D'yakova, M. K. and Vol' - Epshteyn, A. B.

TITLE: Thermal Solution of Enriched Estonian Oil Shales. (Termicheskoye rastvoreniye estonskikh obogashchennykh slantsev).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.2. pp. 62 - 67. (USSR).

ABSTRACT: Results of investigations on the dissolving Estonian enriched shales by heat, in combination with and the distillation of the resulting slurries to coke are given. The properties of the raw material and the solvents are shown in Tables 1 and 2. The process was carried out in 0.5 and 18 litre autoclaves (provided with an agitator) during 6 - 20 minutes at a temperature of 400 - 440°C. The 0.5 litre autoclave was heated for 60 minutes and the 18 litre autoclave for 80 - 90 minutes. The liquid products, with a boiling point above 275°C, were separated from the undissolved shale and from its mineral part by distillation. The latter part of the process was carried out in a 0.5 litre copper retort until all the liquid products were separated, and on a continuous laboratory device built according to the design of E. E. Lider and N. S. Pechur. The method has previously been described by M. K. D'yakova et al (Ref.5). The diameter of the reactor was 50 mm

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65-2-11/12

Thermal Solution of Enriched Estonian Oil Shales.

and the most effective volume about 300 cm^3. The temperature was 440 - 450°C. Yields of end products are given in Table 4. The optimum temperature was shown to depend on the relation between the gasoline and diesel oil fraction in the starting material, and was found to be between 400 - 440°C. Fig.1 shows the influence of the temperature when processing shale with an ash content of 23.56%. The temperature should not be increased above 425 - 430°C because the yield of the liquid products decreases, and also because it is impossible to regenerate the solvent. The shale slurry was processed by contact distillation in a current of circulating gas. It was found that a maximum yield of liquid products could be obtained at temperatures between 425 - 450°C. If the temperature is increased to 490°C the output of the oil is slightly decreased as well as the coke formation, and considerably more gas is produced. If a circulating gas is present the output of the oil is increased at a higher rate because the liquid products are eliminated from the high temperature zones. A considerable decrease in the degree of separation of the oil occurs (from 85.2% to 78.4%) if no circulating gas is present. A

Card 2/5

comparison of the properties of heavy oils, separated from the slurries by filtration, with the properties of oils obtained by processing the slurries in apparatus with hard, agitated heat carriers, shows that they have a very low specific weight (0.9699 against 1.0570), considerably lower viscosity (20.8 against 29.39 centistokes at 40°C), and contain more carbon and hydrogen (C = 84.07%, H = 10.08% against C = 83.38% and H = 9.46%). The optimum separation of liquid products from the slurry in the form of oil (86.7%) occurs when the temperature = 430°C, a volumnar velocity = 3 kg/litre and 1 kg of raw material is fed in 24 kg of heat carrier and 129 litre of circulating gas. Results of the above experiments, and data given by VNIIPS (Ref.6) on the methanol extraction and the hydrogenation purification of the distilled fractions (Ref.7) have made it possible to evolve a new method for the processing of Estonian enriched shales to motor fuels, chemical products and gases (Fig.2). The enriched shale is mixed with a regenerated paste-forming agent in a ratio 1:1.15/weight. The paste is heated in a tubular furnace and enters the reactor where the temperature is 425 - 430°C and the pressure 25 - 30 atms; the reaction time is 15 minutes. The separated slurry is then further processed at a temperature of 430 - 450°C and a volume velocity of about 2 kg/litre for one hour. The liquid products obtained by processing the slurry and the liquid products drawn off from the top of the evaporator are distilled. The precipated semi-coke is used for the initial heating of the heat carrier. Oxygen-containing compounds are separated from the distilled fraction (bp = 350°C) with 95% methanol. The extract is separated into phenols and neutral oxygen-containing compounds with an aqueous solution of alkali, and the phenols separated subsequently from the phenolates. Desulphurised, stable petrol with improved octane number is obtained under the following conditions from the fraction of the raffinate (boiling up to 200°C) by purifying it by hydrogenation: pressure = 100 atms., first reactor catalyst $WS_2 + NiS + Al_2O_3$, temperature = 350°C; second reactor catalyst WS_2, temperature = 400°C, volume velocity = 1.5 l/l/hr while supplying 1400 litre of hydrogen to 1 kg of raw material. The hydrogenation purification of the diesel oil fraction (with bp = 300 - 350°C) is carried out under analogous conditions, but in the second reactor the temperature is 380°C. The

Thermal Solution of Enriched Estonian Oil Shales. 65-2-11/12

following products are obtained after washing with alkali and distillation: motor fuel A-70 (octane number with 1.5 ml, P-9 to 1 kg of benzene = 70; sulphur content 0.08%), and fuel for high speed diesel enginesДТ (cetane number 50, sulphur content 0.09%, viscosity at 20°C = 4.0 centistokes, solidification point = -23°C and flash point = 77°C). The total yield of products obtained from enriched shale with a mineral content of 11.22% is as follows:- motor fuel A-70 = 19.6%, diesel fuel DL = 18.8%, phenols (bp 180 - 350°C) = 5.8%, neutral oxygen-containing compounds 5.5%, gas (calorific value 5,900 Cal/nm^3) = 17.2%, organic matters of semi-coke (containing about 30% of mineral matter in the semi-coke) 27.2% and consumption of hydrogen = .34%. There are 2 Figures, 6 Tables and 7 Russian References.

AVAILABLE: Library of Congress.

Card 5/5

D'YAKOVA, M.K.; DAVTYAN, N.A.

Composition of phenols, the products of thermal destruction of peat. Zhur. prikl. khim. 31 no.8:1259-1265 Ag '58. (MIRA 11:10)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Peat) (Phenol)

DYAKOVA, M.K.

ИССЛЕДОВАНИЕ СТРУКТУРЫ ВЫСОКОКИПЯЩИХ ФЕНОЛОВ СРЕДНЕТЕМПЕРАТУРНОЙ СМОЛЫ ЧЕРЕМХОВСКИХ УГЛЕЙ И ЕЕ ЖИДКОФАЗНОГО ГИДРОГЕНИЗАТА И ГИДРОГЕНИЗАЦИОННАЯ ПЕРЕРАБОТКА ИХ НА ЦЕННЫЕ НИЗШИЕ ФЕНОЛЫ

М. К. [illegible], А. В. [illegible],
[illegible], М. И. [illegible]

VIII Mendeleyev Congress for General and Applied Chemistry in Section of Chemistry and Chemical Technology of Fuels, publ. by Acad. Sci. USSR, Moscow 1959

abstracts of reports scheduled to be presented at above mentioned congress, Moscow, 15 March 1959.

DAVTYAN, N.A.; D'YAKOVA, M.K.

Investigating the structure of higher phenols in the tar hydrogenate of Cheremkhovo coals. Trudy IGI 9:26-36 '59.

(Phenols) (Coal tar) (MIRA 13:1)

D'YAKOVA, M.K.

Mechanism of the thermal dissolution of sapropelite fuels. Trudy IGI 9:158-169 '59. (MIRA 13:1)
(Sapropelites) (Liquid fuels)

D'YAKOVA, M.K.; ZHAROVA, M.N.

Behavior of peat components during the process of thermal dissolution. Trudy IGI 9:170-180 '59. (MIRA 13:1)
(Peat) (Liquid fuels)

D'YAKOVA, M.K.; DAVTYAN, N.A.

Phenols from the thermal processing of solid fuels. Plast. massy no.3:55-57 '60. (MIRA 13:6)
(Phenols) (Fuel)

D'YAKOVA, M.K.

PHASE I BOOK EXPLOITATION SOV/4579

Konferentsiya po razvitiyu proizvoditel'nykh sil Vostochnoy Sibiri, 1958.
Khimicheskaya sektsiya

Khimicheskaya promyshlennost'; trudy konferentsii (Chemical Industry; Transactions of the Conference on the Development of Production Forces in Eastern Siberia) Moscow, Izd-vo AN SSSR, 1960. 202 p. (Series: Razvitiye proizvoditel'nykh sil Vostochnoy Sibiri) Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Sovet po izucheniyu proizvoditel'nykh sil. Sibirskoye otdeleniye.

Editorial Board: I.P. Bardin (Deceased) Chief Ed., Academician; M.A. Lavrent'yev, Academician; S.I. Vol'fkovich, Academician, V.I. Dikushin, Academician; V.S. Nemchinov, Academician; V.I. Veyts, Corresponding Member, Academy of Sciences USSR; O.D. Levitskiy, Corresponding Member, AS USSR; N.N. Nekrasov, Corresponding Member, AS USSR; L.V. Pustovalov, Corresponding Member, AS USSR; T.S. Khachaturov, Corresponding Member, AS USSR; N.F. Rostovtsev, Academician, VASKhNIL; A.N. Popov, Corresponding Member, Academy of Building and Architecture USSR; L. Ye. Grafov, Deputy Chairman, Gosplan RSFSR; A.D. Gashev, Member, Gosplan RSFSR; A. Ye. Probst, Professor; V.F. Vasyutin, Professor; V.A. Krotov, Professor; P.V. Vasil'yev, Doctor of Economic Sciences; G.L. Lyudogovskiy, Candidate of Technical Sciences; F.A. Letunov, Candidate of Geological and Mineralogical Sciences; and N.G. Shkol'nikov, Candidate of Economic Sciences; Editorial Board of this volume: S.I. Vol'fkovich (Resp. Ed.); G.V. Uvarov, Deputy Chairman, State Committee on Chemistry, Council of Ministers USSR; and V.P. Komarov, Docent; Ed. of Publishing House: A.L. Bankvitser; Tech. Ed.: V.V. Brazgal'.

PURPOSE: This book is intended for chemical engineers and economic planners concerned with the industrial development of Eastern Siberia.

COVERAGE: This volume is one of a series of 13 containing the Transactions of the Conference on the Development of the Productive Forces in Eastern Siberia. The Conference took place in August 1958. The volume contains summaries of 20 reports presented at the meetings of the Chemical Section of the Conference, brief summaries of pertinent discussions, and the text of resolutions taken by the Chemical Section. The reports deal with the possibilities of developing chemical industries in Eastern Siberia capable of producing artificial fibers, acetylene, plastics, synthetic detergents, synthetic rubber, mineral fertilizers, sulfuric acid, nitrogen, soda, chlorine, etc. No personalities are mentioned. There are no references.

Chemical Industry (Cont.) SOV/4579

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9

D'YAKOVA, M.K.

PHASE I BOOK EXPLOITATION SOV/4579

Konferentsiya po razvitiyu proizvoditel'nykh sil Vostochnoy Sibiri, 1958. Khimicheskaya sektsiya

Khimicheskaya promyshlennost'; trudy konferentsii (Chemical Industry; Transactions of the Conference on the Development of Production Forces in Eastern Siberia) Moscow, Izd-vo AN SSSR, 1960. 202 p. (Series: Razvitiye proizvoditel'nykh sil Vostochnoy Sibiri) Errata slip inserted. 2,000 copies printed.

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Chemical Industry (Cont.) SOV/4579

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1-23-61

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S/062/60/000/012/013/020
B013/B054

AUTHORS: Vol'-Epshteyn, A. B., D'yakova, M. K., and Surovtseva, V.V.

TITLE: Conversion of Organic Compounds With Quaternary Carbon Atoms in Catalytic Hydrogenation

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 12, pp. 2230-2233

TEXT: The authors studied the catalytic hydrogenation of organic compounds on the example of 2-phenyl-2-hydroxy-phenyl propane, 2,2-dihydroxyphenyl propane, and isooctane. The experiments were made in a rotating autoclave at a temperature of 275°C and an initial hydrogen pressure of 40 atm on a $WS_2+NiS+Al_2O_3$ catalyst. A table gives the composition of the hydrogenation products of 2-phenyl-2-hydroxy-phenyl propane and 2,2-dihydroxy-phenyl propane. On the basis of the results obtained, the authors set up the enclosed diagram for the presumable conversion mechanism of these compounds under given conditions (principal reaction on the left, side reaction on the right). Isooctane is not converted under given

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Conversion of Organic Compounds With Quaternary Carbon Atoms in Catalytic Hydrogenation

S/062/60/000/012/013/020
B013/B054

conditions. The resulting product did not differ from the initial isooctane. During the experiments, the authors made the following statements: the stability of the carbon-carbon bond between aliphatic chain and benzene ring is considerably reduced under the action of the phenol hydroxyl in the ring (in para-position in the experiments), the reduction being strongest in the quaternary atom of the aliphatic chain. The reduction is lower in the ternary atom, and it is assumed that in the case of a secondary bond between carbon atom and hydroxy-phenyl radical the stability is reduced even less. This circumstance might be important to the acceleration of decomposition reactions of carbon and resin residues containing hydroxy-phenyl radicals in their destructive hydrogenation in the liquid phase. The authors mention A. V. Lozovoy, R. N. Tsirlina, S. A. Senyavin, and L. S. Sovetova. There are 1 figure, 1 table, and 8 references: 4 Soviet, 2 German, and 2 US.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Mineral Fuels of the Academy of Sciences USSR)

SUBMITTED: July 6, 1959

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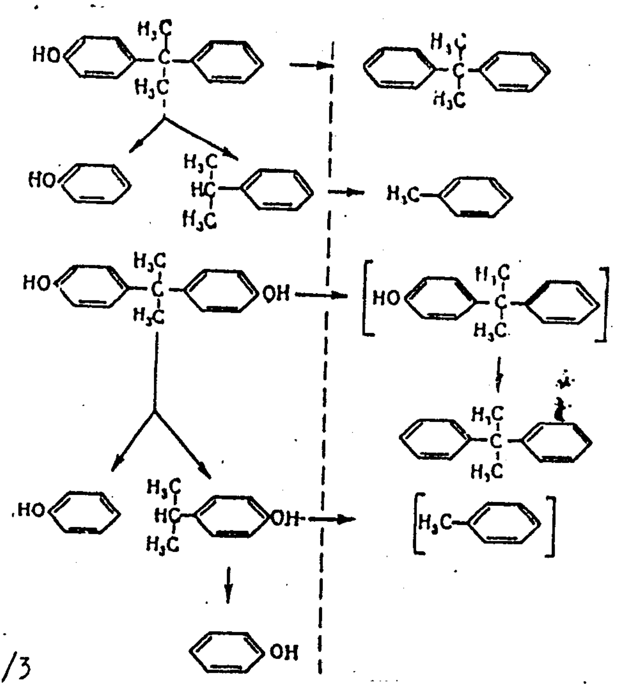
S/062/60/000/012/013/020
B013/B054



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Card 3/3

BEKHTLE, G.A.; GRITSAYENKO, A.I.; D'YAKOVA, M.K.; ZHAROVA, M.N.

Using semicoke tars from Cheremkhovo coals for the flotation of iron ores. Zhur.prikl.khim. 34 no.10:2332-2337 O '61. (MIRA 14:11)

1. Institut goryuchikh iskopayemykh AN SSSR i filial Instituta gornogo dela AN SSSR na Kurskoy magnitnoy anomalii.
(Coal tar) (Iron ores)

D'YAKOVA, M.K.; DAVTYAN, N.A.; ZHAROVA, M.N.; AVRAMENKO, V.I.; KARANDASHEVA,V.M.

Obtaining solvents from naphthalene-containing industrial oils. Koks i khim. no.10:40-43 '62. (MIRA 16:9)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Coke industry—By-products) (Solvents)

D'YAKOVA, M.I.

Process of fertilization in Mirabilis jalapa L. Biul.MOIP.Otd. biol. 67 no.3:145 My-Je '62. (MIRA 15:11)
(Four-o'clock) (Fertilization of plants)

D'YAKOVA M.V.

GIROVSKIY, V.F., nauchnyy rabotnik; KANTORER, S.B., nauchnyy rabotnik; SHASS, M. Ye., nauchnyy rabotnik; D'YAKOVA, M.V., nauchnyy rabotnik; BABENKO, A.P.; VOLPYANSKIY, S.Ya.; MERZLYAK, G.N.

[Socialist competition for cost reduction in construction work] Sotsialisticheskoe sorevnovanie za snizhenie stoimosti stroitel'nykh rabot. [Avtorskii kollektiv: V.F.Girovskii i dr.] Moskva, Gos.izd-vo lit-ry po stroitel'stvu i arkhitekture, 1953. 55 p. (MLRA 6:7)

1. Moszhilstroy trest (for Babenko, Volpyanskiy, Merzlyak). 2. Kafedra Organizatsii i planirovaniya stroitel'nogo proizvodstva MIEI imeni S.Ordzhonikidze. 3. Moskovskiy inzhenerno-ekonomicheskiy institut imeni S.Ordzhonikidze (for Girovskiy, Kantorer, Shass, and D'yakova).
(Construction industry--Costs)

GNEVUSHEV, M.A.; KRASOV, L.M.; DUBOTOVKO, Yu.V.; D'YAKOVA, N.I.

Color of Yakutian diamonds. Trudy IAFAN SSSR. Ser.geol. no.6:87-96 '61. (MIRA 14:9)

(Yakutia--Diamonds)

BYLINKINA, A.A.; D'YAKOVA, N.P.; KISELEVA, I.B.

Bathophenanthroline. Met. poluch. khim. reak. i prepar.
no.6:46-48 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

KOCHETKOVA, S.A.; BYLINKINA, A.A.; D'YAKOVA, N.P.

4-Phenyl-8-nitroquinoline. Met. poluch. khim. reak. i prepar. no.6:48-50 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

BYLINKINA, A.A.; D'YAKOVA, N.P.

4-Phenyl-8-aminoquinoline. Met. poluch. khim. reak. i prepar. no.6:50-51 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

D'IAKOVA, R. I.

D'yakova, R. I. - "On a study of the underground organs of steppe plants, Filipensula hexapetala Gilib," Doklady Mosk. s. -kh. akad. im. Timiryazeva), Issue 9, 1949. p. 56-57

SO: U-5240, 17, Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No. 25, 1949).

D'YAKOVA, R. I. --

"Vegetation of the Zarayskaya Rayon of the Moskovskaya Oblast." Cand Biol Sci, Moscow Agriculture Acad Imeni Timiryazev, Moscow, 1953. (RZhBiol, No 2, Sep 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

SO: Sum. No. 481, 5 May 55

D'YAKOVA, R.I.

Steppe vegetation of the Zaraysk District of the Moscow Province. Biul. MOIP. Otd.biol. 58 no.1:68-70 '53. (MLRA 6:5)
(Zaraysk district--Botany) (Botany--Zaraysk district)

D'YAKOVA, R.I., kandidat biologicheskikh nauk.

Vegetation of meadows of the Moscow River Floodland in the territory of the "Novyi Put'" Collective Farm, Bronnitsy District, Moscow Province. Izv. TSKhA no.1:229-237 '56. (MLRA 9:10)

(Bronnitsy District--Pastures and meadows)

D'YAKOVA, R. M.

D'YAKOVA, R. M.: "The effect of measured inhalations of oxygen on certain functional indexes in children". Dnepropetrovsk, 1955. Min Health Ukrainian SSR. Dnepropetrovsk State Medical Inst. (Dissertations for the Degree of Candidate of Medical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

D'YAKOVA, R.M., kand.med.nauk

Clinical picture of gastrointestinal diseases caused by the intestinal bacillus in children. Ped., akush. i gin. 23 no.3: 3-6 '61. (MIRA 15:4)

1. Kafedra pediatrii (zav. - kand.med.nauk R.M.D'yakova) Zaporozhskogo instituta usovershenstvovaniya vrachey (direktor - dotsent V.T.Karpukhin).
(ESCHERICHIA COLI) (INTESTINES—DISEASES)

D'YAKOVA, R.M., dotsent; ZUZANOVA, V.I., prof.; LITVINENKO, A.G. [Lytvynenko, A.H.]; PESNYACHEVSKAYA, G.D. [Pisniachevs'ka, H.D.]; BESONOVA, M.M., prof.; BELYY, O.F. [Bielyi, O.F.]; PRIMAKOV, S.V.; YUNKO, M.A.; GOL'DIS, S.N. [Hol'dis, S.N.]; BARAN, M.A.; KOSACHEVSKAYA, P.I. [Kosachevs'ka, P.I.], dotsent; SHTAN'KO, L.V.; GAGARINOV, V.S. [Haharynov, V.S.]

Annotations and author's abstrcts. Ped. Akush. i gin. 24 no.6:33-36 '62. (MIRA 17:4)

1. Kafedra pediatrii Zaporozhskogo instituta usovershenstvovaniya vrachey (for D'yakova). 2. Kafedra pediatrii Odesskogo meditsinskogo instituta (for Zuzanova). 3. Klinika infektsionnykh bolezney Odesskogo meditsinskogo instituta (for Litvinenko). 4. Kafedra detskikh infektsionnykh bolezney Khar'kovskogo meditsinskogo instituta (for Pesnyachevskaya). 5. Klinika detskikh infektsionnykh bolezney Krymskogo meditsinskogo instituta (for Bezsonova). 6. Kafedra fakul'tetskoy pediatrii Krymskogo meditsinskogo instituta(for Belyy). 7. Shakhternaya bol'nitsa g. Bokovo-Antrasit (for Primakov). 8. Starosamborskaya rayonnaya bol'nitsa L'vovskoy oblasti (for Yunko). 9. Vinnitskaya detskaya bol'nitsa No.2 (for Gol'dis). 10. Kafedra gigiyeny Kiyevskogo instituta usovershenstvovaniya vrachey (for Baran, Kasochevskaya). 11. Kafedra urologii Kiyevskogo meditsinskogo instituta (for Shtan'ko). 12. 9-ya gorodskaya bol'nitsa g. Dneprodzerzhinske (for Gagarinov).

KOROLEV, F.A.; D'YAKOVA, S.M.; GRIDNEV, V.I.

Identification of radiations in the far infrared region using the method of residual rays. Vest. Mosk. un. Ser. 3: Fiz., astron. 18 no.3:3-5 My-Je '63. (MIRA 16:10)

1. Kafedra optiki Moskovskogo universiteta.

5(4)

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AUTHORS: Kuznetsov, V. A., D'yakova, T. D., Mal'tseva, V. P.

TITLE: Investigation of Electrocapillary Phenomena in Bismuth - Cadmium Alloys and of the Surface Tension of These Alloys in Vacuum

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1551-1559 (USSR)

ABSTRACT: In spite of several papers devoted to electrocapillary phenomena (EP) of alloys (A), some problems have not yet been solved such as are the influence exercised by the alloy composition upon the potential maximum of the electrocapillary line. In addition to an investigation of (EP) a study of the surface tension of (A) would be convenient, especially a comparison of the adsorption phenomena at the boundaries between metal - electrolyte and metal - vacuum. Pertinent investigations were carried out on the bismuth - cadmium alloy, using a eutectic LiCl - KCl melt as an electrolyte. The electrocapillary lines were plotted by means of a capillary electrometer (Fig 1). The alloy surface tension was measured by the method of maximum pressure in the drop (Refs 3, 10) on a so-called gravitation device designed by P. P. Pugachevich (Refs 12, 13). A special

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