SOV/68-58-11-14/25

AUTHORS: Vorozhtsov N.N., Corresponding Member of the Academy of Science of the USSR, Doctor of Chemical Science, Lisitsyn V.N., Candidate of Chemical Science, Agafonov A.V. and Krasivichev V.V., Candidates of Technical Science, and Abayeva B.T., Candidate of Chemical Science

TITLE: Transformation of Higher Homologues of Phenol into Lower Ones (Prevrashcheniye vysshikh gomologov fenola v nizshiye)

PERIODICAL: Koks i Khimiya, 1958, Nr 11, pp 42-47 (USSR)

ABSTRACT: The results of an investigation on the dealkylation of technical xylenol with simultaneous alkylation of benzole in a pilot plant of the All-Union Scientific Research Institute of the Petroleum Industry in which bead aluminosilicate was used are described. This was a continuation of the previously published work (Ref 1) on the transformation of xylenols (on interaction with benzole) into phenols and cresols on cracking under mild conditions on an aluminosilicate catalyst. The experimental plant used (Fig 1) is outlined. It was established that, on passing xylenol in mixture with benzole

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(1 : 3.65 by weight) over aluminosilicate catalyst at temperatures in the range 300-400°C and volume velocities of 0.42-1.47hr^{-1}, up to 60% (on weight of starting xylenol) of phenolic compounds (phenol, o-, m- and p-cresols, xylenols), including 20-22% of phenolic-cresolic fraction, are obtained. Simultaneously 11-19% of benzene homologues with a boiling temperature of 100-185°C and 13-18% of neutral compounds with boiling temperatures above 185°C are formed. 8-25% of coke is deposited on the catalyst. The influence of the temperature of the reaction, the volume velocity of reactants (Table 1), additions of water vapour and various proportions of benzole (Table 2) on the transformation of xylenol and changes in the activity of the catalyst with time of operation (Table 3) were established. It was found that at temperatures 300-320°C and volume velocities 0.92-1.47hr^{-1} more phenolic-cresolic fraction and less of neutral compounds and coke on the catalyst is obtained (taking into consideration the transformation of xylenol). At 300°C and a volume velocity 0.92hr^{-1} 330kg of

Transformation of Higher Homologues of Phenol into Lower Ones

phenolic-cresolic fraction and about 200kg of benzene homologues with a boiling temperature 100-185°C can be obtained from 1 ton of xylenol.
There are 3 tables, 3 figures and 6 references (4 Soviet, 1 English and 1 German)

ASSOCIATION: MKhTI im. D.I. Mendeleyeva, VNII NP

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AGAFONOV, A. V., ZHERDEVA, L. G., KARASEVA, A. A., VOZNESENSKAYA, E. V., ALTSHULER, A. E., KROL, B. B., OROCHKO, D. I., AKIMOV, V. S., MIKHAYLOV, B. B., DRUZHININA, A. V.

"Production of Lubricating Oils and Paraffin from Sulfurous Oils in the USSR."

Report submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York City.

AGAFONOV, A. V., TOPCHIYEVA, K. V., KALIKO, M. A., PIGUZOVA, L. I.
AGAFONOV, A. V., PANCHENKOV, G. M., KAMAKIN, N. M., MIRSKIY, Y. S.

"Studying the Nature of Activity of Alumosilicate Catalysts."

Report submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York.

SOV/65-59-4-4/14

AUTHORS: Agafonov, A.V., Abayeva, B.T., Andreyeva, A.S., Eygenson, A.S., Kantor, I.I. and Ivchenko, Ye.G.

TITLE: Catalytic Cracking of Crude and Hydro-Purified Vacuum Gas-Oil from Arlan. Petroleum (Kataliticheskiy kreking iskhodnogo i gidroochishchennogo vakuumnogo gazoylya arlanskoy nefti)

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1959, Nr 4, pp 18-24 (USSR)

ABSTRACT: Vacuum gas-oil from Arlan petroleum contains 3.2% sulphur compounds, 0.11% nitrogen compounds and 24% tarry substances; these quantities are larger than the corresponding quantities in heavy gas-oil from Tatariya and Bashkiriya petroleums. These components block the active surface of the catalyst during cracking, prevent the access of hydro-carbon molecules and therefore decrease the degree of conversion of the crude material. Considerable amounts of coke are deposited on the catalyst which inhibits secondary reactions and leads to decreased yields and inferior quality end-products. Hydro-purification was carried out on a continuous apparatus in the VNII NP by

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Catalytic Cracking of Crude and Hydro-Purified Vacuum Gas-Oil from Arlan Petroleum

N.A.Chepurov and R.N.Yudinson; a stationary aluminium-cobalt-molybdenum catalyst was used at 380°C, a pressure of 50 atm and space velocity of the supplied crude material of 0.7 hour^{-1}. The properties of the starting material and of the hydro-purified vacuum gas-oil are tabulated (table 1). The octane number of the end product was appreciably higher than when using fractional distillation (58.5 as compared to 41.0) and contained considerably less sulphur (0.013 as against 0.17%). The properties of the gas-oil fractions are listed in table 2. Cracking experiments of both the crude and hydro-purified vacuum gas-oil were carried out on a pilot plant with a synthetic bead catalyst at temperatures within the limits of 430 to 520°C, atmospheric pressure and a space velocity of 0.65 to 1.5, calculated on the volume of the catalyst per hour. The ratio of the catalyst to the crude material was constant in all experiments and equalled 5:1 (table 3). Optimum

Catalytic Cracking of Crude and Hydro-Purified Vacuum Gas-Oil from Arlan Petroleum

yields of petrol were obtained at temperatures between 450 and 475°C when the optimum space velocity of the supplied raw material was within the limits of 1.0 to 0.65 hours^{-1}. The hydro-purified vacuum gas-oil could more easily be processed; an optimum yield of light components at the same space velocities was achieved at 50°C. The authors concluded that the presence of a considerable quantity of light fractions boiling up to 350°C (37.6 as against 19.4%) influences the yield of the light components. The optimum yield at this temperature reached 66 to 67% by weight as against 58 to 59%. Results of the cracking experiments indicate (Fig 1) that the hydro-purification of the crude (by separating the tarry substances, metals, sulphur and nitrogen) improves the process conditions and also the yields and properties of the cracking products (compare table 4). The gasoline obtained by this process is less unsaturated, contains more aromatic compounds and has higher octane numbers (80 to 81.5 as compared to

Catalytic Cracking of Crude and Hydro-Purified Vacuum Gas-Oil from Arlan Petroleum

77.7 to 80.7) (Fig 2). A lower content of unsaturated compounds renders the gasoline more stable. Its induction period exceeds 600 minutes. The light catalytic gas-oils, obtained during the cracking of hydro-purified crudes, show improved properties. Their cetane number is 34 to 38 (as against 30 to 33) and they contain 0.21 to 0.38% sulphur (as against 2.6 to 3.3%) (Fig 3). These light gas-oils can be used directly as components of diesel fuels. The heavy catalytic gas-oils (fractions boiling above 350°C) can be used for the production of lubricating oils or re-used as recycles. In both cases 2 to 3% of the tarry (tail) fractions have to be separated. The gaseous hydrocarbons produced by this process are of interest as starting materials for petro-chemical syntheses. The influence of the temperature on the ratio of unsaturated and saturated

Card 4/5 hydrocarbons in gaseous reaction products, and on the

Catalytic Cracking of Crude and Hydro-Purified Vacuum Gas-Oil from Arlan Petroleum

content of unsaturated hydrocarbons in the gas, is shown in a graph (Fig 4). There are 4 figures, 4 tables and 2 English references.

AUTHORS: Agafonov, A.V., Basov, A.N., Manakov, N.Kh. and Manshilin, V.V.

TITLE: Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst (Kombinirovannaya ustanovka pryamoy peregonki nefti i kataliticheskogo krekinga ostatochnogo syr'ya na mikrosfericheskom prirodnom katalizatore)

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1959, Nr 4, pp 25-31 (USSR)

ABSTRACT: Petroleum refineries have to process asphalt-tar substances of petroleum which can be extremely difficult. Processing methods hitherto applied use high temperatures (above 450°C) at high or low pressures. A high yield of tarry residues and poor quality gasoline or distillate fractions and petrols of low quality and also hard residues in the form of petroleum coke are obtained by thermo-cracking. The temperature is an important factor during thermal destructive processes. It has been found that temperatures should be selected to give fractions with octane numbers exceeding 70 and that the cetane

Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst

number of the diesel fuel fraction should not exceed 42 to 43. The VNII NP have developed an economical catalytic destructive process for the treatment of residual petroleum crudes which makes it possible to obtain high grade gasoline and diesel fuels in industrial quantities. The process was tested under laboratory, pilot plant and industrial conditions. The VNII NP is, in collaboration with the Giproneftezavod Institute, at present designing two plants where the simultaneous fractional distillation and catalytic cracking of the petroleum crude can be carried out, one with an annual capacity of 2 million tons and a second of 3 million tons. The lay-out of both factories will be the same as is shown in Fig 1. The asphalt-tar substances will be subjected to the direct action of aluminium silicate catalysts which will be sufficiently active to ensure decomposition of the high molecular petroleum fractions (boiling above 530 to 550°C). The light gas-oil fractions of the petroleum will not be decomposed and the cetane number of the diesel fuel

Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst

fraction, obtained during the process, should be 42 to 43 or higher. The newly-formed fraction of the gasoline should have an octane number of 76 to 78 and above. The crude petroleum or fuel oil can be directly supplied into the reactor. Various further improvements in the process are described. The percentage composition of the end product obtained on a natural microspherical catalyst in an industrial plant is given, as well as experimental data, obtained by VNII NP during 1958, on fuel oil subjected to catalytic cracking on a pilot plant. The coke deposited on the catalyst can be separated by roasting at a temperature of about 600°C; the importance of the catalyst is discussed. By using pneumatic transport for the catalyst in a highly concentrated current it is possible to decrease the height of the plant and, therefore, to lower construction costs. The regeneration of the catalyst is intensified. The considerable enlargement of the desorption zone in the reactor, and also the creation of a counter-current

Combined Plant for Fractional Distillation of Petroleum and of Catalytic Cracking Residues on a Microspherical Natural Catalyst

desorption zone in the regenerator for degasification and activation of the regenerated catalyst, decreases coke-formation and the yield of methane, gives higher grade gasoline and simplifies the further separation of cracking gases. Practically all the heat, generated by burning the coke and other component gases, is utilised. These vapours are used as power and also for desorption or for heating. The plant is also equipped for utilising the effluents. Comparative technical and economical characteristics are listed in a table. The authors also refer to a relevant article by Sherwood which was published in "Petroleum", 1959, Nr 2. There are 2 figures, 1 table and 1 English reference.

SOV/65-59-4-7/14

AUTHORS: Agafonov, A.V., Soskind, D.M. and Abayeva, B.T.

TITLE: The Operation and Methods of Reconstruction of Catalytic Cracking Plants Where Bead Catalysts are Used (Opyt ekspluatatsii i puti rekonstruktsii ustanovok kataliticheskogo krekinga s sharikovym katalizatorom)

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1959, Nr 4, pp 34-44 (USSR)

ABSTRACT: Investigations were carried out in the VNII NP which made it possible to work out conditions and make recommendations for the manufacture of high quality petrols. Heavy distillates, boiling at temperatures between 300 and 500°C, can be used. The process is carried out in one stage and, therefore, the efficiency of the plant increased by 30 to 35%. The properties of the gas-oil fractions of Romashkaya petroleum are given in table 1. It can be seen that the heavy crudes differ from the kerosine-gas-oil fractions by their high boiling and solidification points, by their high content of tar, sulphur and aromatic compounds as well as by appreciable content of polycyclic aromatic compounds,

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The Operation and Methods of Reconstruction of Catalytic Cracking Plants Where Bead Catalysts are Used

asphaltenes and metal salts. Various investigations carried out in the Novoufimka plant during 1954 to 1955, and modifications of the plant carried out at the time, are discussed in detail. The reconstructions, carried out at present, aim to increase the efficiency of the plant 1.5-fold (first modification) and 1.7-fold (second modification) without altering the principal layout of the plant. A further reconstruction is to achieve a considerable improvement in the conversion process which will increase the efficiency of the plant by 100% (third modification). The first modification is based on recommendations made by the authors, the Novoufimka factory Giproneftemash and Giproneftezavod. This type of reconstruction was carried out on one plant of the NUNPZ and three plants of the Salavatskiy factory. The various modifications are listed in a table on page 40 and the most important of these discussed in detail. Table 2 shows the improvements achieved during 1956 to 1957 and the first nine months of 1958 in various plants where the recommended

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reconstructions have been carried out. The second modification was recommended by GrozNII and Giproneftezavod and the third by VNII NP and Giproneftemash. The lay-out of the last plant is given in Fig 3 and the authors suggest that this last modification should only be incorporated in newly-erected plants. There are, however, various drawbacks e.g. the circulation time of the catalyst is rather low, the generator is not completely efficient, the cooling pipes of the regenerator are unsatisfactory and this leads to an increased catalyst consumption. There are 3 figures and 2 tables.

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S/081/63/000/002/069/088
B160/B144

11.0140

AUTHORS: Osipov, L. N., Gol'dshteyn, D. ..., Agafonov, A. V.

TITLE: Hydrofining of diesel fuels

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1963, 461, abstract 2P128 (Tr. Vses. n.-i. in-t po pererabotke nefti i gaza i polucheniyu iskusstv. zhidk. topliva, no. 8, 1959, 54 - 73)

TEXT: The process of hydrofining sulfurous straight-run distillates and secondary distillates was studied in laboratory high-pressure circulation equipment with an industrial Al-Co-Mo catalyst. The rate of hydrating the S-compounds and unsaturated hydrocarbons at the given partial H_2 pressure is shown to increase as the temperature rises to 420°C; at a higher temperature of the order of 460°C the rate of hydration decreases. The optimum partial H_2 pressure in the hydrofining of diesel-fuel distillates depends on the chemical composition of the crude. Hydrofining of low-aromatic distillates can be carried out at a comparatively low partial H_2 pressure (15 - 20 atm.) and hydrofining of aromatized distillates (e.g. catalytic-

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Hydrofining of diesel fuels

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B160/B144

cracking distillate) at a high partial H_2 pressure. In the process of hydrofining low-aromatic distillates at a comparatively low partial H_2 pressure, the amount of H_2 consumed in the reaction decreases as the temperature of the processes rises (> 380°C) as a result of dehydration of the naphthene hydrocarbons contained in the crude. Certain gases containing H_2, which are produced in a number of processes (e.g. the circulating waste gas of the hydroforming process) can be used for hydrofining straight-run and other low-aromatic distillates. 16 references. [Abstracter's note: Complete translation.]

Card 2/2

AGAFONOV, A-V

PHASE I BOOK EXPLOITATION SOV/4659

Osnovy tekhnologii neftekhimicheskogo sinteza (Fundamentals of Synthesis Technology in Petroleum Chemistry) Moscow, Gostoptekhizdat, 1960. 852 p. 3,800 copies printed.

Eds.: Dintses, Arkadiy Il'ich, Professor, and Lev Aleksandrovich Potolovskiy, Professor; Executive Ed.: L.A. L'vova; Tech. Ed.: E.A. Mukhina.

PURPOSE: This book is intended for engineers and chemists of petroleum refineries and chemical plants, for councils of the national economy, planning organizations and scientific research institutes engaged in chemical processing and large-scale utilization of petroleum stock for the production of synthetic products.

COVERAGE: The book describes important commercial methods of producing hydrocarbon petroleum and gas stock and coal stock for the manufacture of alcohols, aldehydes, ketones, acids, detergents, synthetic fibers, and synthetic rubber. Flow sheets are included, and the basic equipment of the petrochemical industry is described. The physicochemical properties and use of intermediate and end synthetic products are also described. The state of the petrochemical industry outside the USSR and prospects for its development are covered. No personalities are mentioned. References follow each chapter.

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TABLE OF CONTENTS:

AGAFONOV, A.V.; ABAYEVA, B.T.; OKINSHEVICH, N.A.

Distribution of sulfur in the cracking products of heavy charge stocks. Khim.sera-i azotorg.soed.sod.v neft.i nefteprod. 3:183-192 '60. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.
(Petroleum products) (Sulfur organic compounds)

GOL'DSHTEYN, D.L.; OSIPOV, L.N.; AGAFONOV, A.V.

Selective hydrofining of catalytically cracked gasolines. Khim.sera i azotorg.soed.sod.v neft.i nefteprod. 3:389-395 '60. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.
(Gasoline) (Cracking process)

S/065/60/000/006/006/008/XX
E194/E484

AUTHORS: Agafonov, A.V., Gel'ms, I.E. and Rabikovich, E.I.

TITLE: The Selection of Catalyst for Cracking Residual Petroleum Fractions and Study of its Poisoning During the Process

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, No.6, pp.6-12

TEXT: A special feature of the operating conditions of catalyst when cracking residual feed is the high rate of poisoning of the catalyst by the combined influence of temperature, steam, sulphur compounds and resinous substances containing metallo-organic compounds. The poisoning is specially marked with catalyst in powder form. The high molecular hydro-carbons of the heavy part of the feed are the main source of products that are of low stability at temperatures used for cracking so that there is no need for a great reduction in the energy of activation. Moreover, the use for this purpose of high activity catalysts is accompanied by considerable increase in gas and coke formation. The measure of the necessary activity of catalyst used in cracking residual feed should be the production of gasoline of good engine properties combined with

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S/065/60/000/006/006/008/XX
E194/E484

The Selection of Catalyst for Cracking Residual Petroleum Fractions and Study of its Poisoning During the Process

favourable gas composition and a high rate of conversion of the residual fractions. It is desirable to use large plants for cracking residual fractions which requires large quantities of catalyst of appropriate quality. It is found that the requisite conditions are satisfied by fire-resistant high-alumina kaolin clays, many kinds of which after simple heat treatment have sufficiently good and stable catalytic properties. Table 1 gives the characteristics of semi-industrial quantities of natural catalysts obtained from various natural clays. In this table the activity of the catalysts is characterized by the cracking of light feed as this gives the more sensitive index of performance. Catalyst poisoning is then considered and Table 2 gives experimental data about the deactivation of a simple, natural, microspherical catalyst. Characteristics of the cracker feed-stocks are given in Table 3. The tests, results of which are given in Table 2, were continued for 20 days and the observed changes in catalyst properties may be considered as the results of poisoning by metals and sulphur combined with poisoning due to reduction in the surface and porosity

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caused by heat and steam. The selectivity of the catalyst was much reduced. Comparison between the test results and those of laboratory tests with artificial poisoning of the catalyst by metal showed that in the tests most of the poisoning was due to metals and not sulphur, see Table 4. The influence of metals deposited on the catalysts on certain characteristics of cracking of distillate and crude oil feeds are given in Table 5. Note should be made of the much smaller degree of poisoning of the catalyst by an equal quantity of deposited metal when cracking residual feed rather than distillate. The influence of steam was studied in the laboratory and the results are given in Table 6; it will be seen that treatment of poisoned catalyst by steam promotes recovery of activity and improves the selectiveness. It is concluded from the work that catalytic cracking of residual feed stock on micro-spherical natural catalyst is practical and a stable process can be achieved. The capital cost of constructing a catalyst manufacturing works should not be above 500 roubles per ton of catalyst produced per year. Investment in quarries and other

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E194/E484

The Selection of Catalyst for Cracking Residual Petroleum Fractions and Study of its Poisoning During the Process

workings is from 100 to 200 roubles per ton per year. The cost of one ton of finished catalyst is about 400 roubles. It is calculated that the use of natural catalyst rather than synthetic economizes both capital investment in the production of catalyst and the cost of the first charge by not less than 15 roubles for each ton per year of feed stock delivered for catalytic crackings. Accordingly, the economy that results from the use of natural rather than synthetic catalyst for cracking residual feed stock is considerable. There are 6 tables and 8 references: 2 Soviet and 6 English.

ASSOCIATION: VNII NP

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AGAFONOV, A. V.

B/065/61/000/004/003/011
E194/E284

AUTHORS: Rogov, S. P., Danilevich, A. F., Gol'dshteyn, D. L., Rybakov, M. V. and Agafonov, A. V.

TITLE: Hydrofining of Lubricating Oils

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1961, No. 4, pp. 23-27

TEXT: Hydrofining is under consideration as a replacement for earth treating in finishing of solvent raffinates. This article describes tests on the hydrofining of distillates (spindle oil and machine oil Type AC-5 (AS-5)) and residual de-waxed phenol raffinates of the Novokuybyshevsk NPZ. The hydrofining was carried out on a large laboratory pilot plant with gas circulation, finishing with steam stripping. A study was made of the influence of pressure and it was concluded that the pressure of 40 atmospheres, the highest tried, was the best in respect of improving the viscosity index, reducing the coke number and sulphur content and improving the colour of the finished oils. The ratio of volumes of oil per hour to volume of catalyst ranged from 1 to 4. The influence of treatment temperature was then studied using on the one hand an aluminium-cobalt-molybdenum catalyst and on the other an aluminium-molybdenum catalyst. These tests were made with machine oil Type AS-5 at a total pressure of 40 atm and a delivery rate by volume relative to catalyst of 3 l/hours and a gas circulation rate of 300 litres at n.t.p. per litre of feed at temperatures of 275, 300, 325 and 350°C. It was shown that increasing the feed rate has much the same effect as decreasing the pour temperature somewhat increasses the pour point which rose from -18°C with a treatment temperature of 350°C. As a rule increasing the temperature of hydrofined spindle oils under optimum process conditions. Table 3 was obtained with an aluminium-molybdenum catalyst and Table 4 with aluminium-cobalt-molybdenum catalyst.

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B/065/61/000/004/003/011
E194/E284

Hydrofining of Lubricating Oils

Table 3

	Feed	Treated Oil 300°	325°
Viscosity centistokes:	19.03	18.74	18.25
at 50°C	4.87	4.80	4.77
at 100°C	92.3	93.8	95.7
Viscosity index	-14	-13	-12
Pour point °C	190	200	198
Flash point °C	2.5	1.5	1.5
Colour KPA	0.96	0.92	0.86
Sulphur content % weight	0.05	0.02	0.01
Coke No. % weight	6.65	2.13	-
Corrosivity Pinkerich gms/m^2	100.0	99.4	99.1
Yield % weight			

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Hydrofining of Lubricating Oils

Table 4

	Feed	Treated Oil
Viscosity centistokes:		
at 50°C	159.35	153.87
at 100°C	20.98	20.80
Viscosity index	85.1	88.4
Pour point °C	-10	-8
Flash point °C	246	270
Colour NPA	6.5	3.5
Sulphur content % weight	1.03	0.81
Coke No. % weight	0.38	0.27
Yield % weight	100	99.1

The hydrogen consumption in treating the distillate oil was 0.13% weight and in treating the residual oil 0.15% weight. The results of hydrofining and earth finishing are then compared and it is

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shown that hydrofinishing gave the greater yield, about 2% on distillates and 4% on residual lubricants. The hydrofined oils have lower coke number but there is some loss in the viscosity and a slight increase in the pour point. Hydrofining has little influence on the chemical composition of the lubricants. The increase in viscosity index on hydrofining mainly results from newly formed paraffinic, naphthenic and light aromatic hydrocarbons. Preliminary technical and economic calculations show that hydrofinishing of lubricants is promising as a replacement for earth finishing. There is not much to choose between the performance of the two catalysts tested but the aluminium-molybdenum catalyst is cheaper. Full scale tests carried out at the Novokuybyshevsk NPZ confirmed the laboratory test results of the VNII NP. There are 6 tables and 2 non-Soviet references.

ASSOCIATION: VNII NP

Card 5/5

AGAFANOV, A.V., RYSAKOV, M.V., GOLDSHTEYN, D.L., GUSENKOVA, YE.A., ALFIMOVA, YE.A., POSHITNOV, V.N.,

Gewinnung von Motorenolen aus schwefelhaltigen Rohelen durch Hydrierung.

Report to be submitted for the Symposium Lubricants and Lubrication, Dresden, 27-30 June 1961

S/064/61/000/007/003/005
B124/B206

AUTHORS: Agafonov, A. V., Dubinin, M. M., Onusaytis, B. A., Torocheshnikov, N. S.

TITLE: Studies on production and application of new selective adsorbents - molecular sieves - in the USSR

PERIODICAL: Khimicheskaya promyshlennost', no. 7, 1961, 26 - 30

TEXT: The authors give a short summary of the main results of studies in the field of synthetic zeolites conducted in various scientific institutes in 1960 on the basis of the coordination plan of the Komissiya po tseolitam (Zeolite Commission). The Zeolite Commission under the chairmanship of Academician M. M. Dubinin was established at the Otdeleniye khimicheskikh nauk AN SSSR (Department of Chemical Sciences, AS USSR) in 1959, in order to coordinate studies in the field of synthesis and application of synthetic zeolites. Its activities comprised: 1) development of synthesis- and technological processes for synthetic zeolites; 2) investigation of structural properties and adsorption of synthetic and natural zeolites, and 3) study of the application of synthetic zeolites for the drying and separation of gases. Crystallization of zeolites and their ion exchange prop-

erties were investigated at the Institut fizicheskoy khimii AN USSR (Institute of Physical Chemistry, AS USSR) under the direction of I. Ye. Neymark, zeolites of the types CaA, KA, LiA, BeA etc having been produced (the authors use the designations NaA, CaA, NaX and CaX, approved by the above-mentioned Commission, instead of the customary designations 4A, 5A, 10X and 13X). One of the institutes of the chemical industry under the direction of G. I. Mikulin and V. Ya. Nikolenko investigated the technological conditions for the synthesis of zeolites, and one of the institutes of the petroleum industry under the direction of Ya. V. Mirskiy the conditions for the production of crystalline zeolites of the type NaA and CaA in the laboratory and pilot plant. Optimum conditions for the synthesis of zeolites of the types NaA and NaX, as well as the ion exchange for the production of the CaA and CaX zeolites were studied in the laboratory under the direction of M. S. Misin and L. M. Maksimova. The conditions for the synthesis of zeolites of the types A and X were studied at the institut neftyanoy promyshlennosti (Institute of the Petroleum Industry) under the direction of A. V. Agafonov, L. I. Piguzova and B. A. Lipkind, applying the process used by N. S. Kurnakov (Ref. 3: Izv. AN SSSR, 6, 1381, (1937)) for the production of Permutit. The use of aluminum sulfate and aluminum oxy-

Studies on production...

chloride in the synthesis of zeolites was studied in a laboratory of the chemical industry under the direction of V. S. Vinogradova and L. S. Kofman. The institut khimii AN Gruz. SSR (Institute of Chemistry of the Georgian SSR) under the direction of G. V. Tsitsishvili dealt with the kinetics of the crystallization of the NaA zeolites, and the Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry, AS USSR) under the direction of S. P. Zhdanov with the optimum conditions for the production of Na zeolites by hydrothermal synthesis in the temperature range of from 70 to 200°C from strongly basic aluminum silica gels with a base excess of 300 - 500%. The studies by the laboratoriya GEOKhI AN SSSR (Laboratory of the GEOKhI, AS USSR) under the direction of N. I. Khitarov dealt with the drying of gases by means of the natural zeolites natrolite, desmine, thomsonite and limonite, while the use of the chemical-catalytical method for the production of natrolite granules was tried out at the IGI AN SSSR (IGI, AS USSR) under the direction of B. A. Onusaytis.
D. P. Dobychin elaborated a process for the production of porous glasses of the molecular sieve type yielding a molecular sieve with a porosity close to that of the CaA zeolite from the Na-7/23 (Na-7/23) glass, and one with a porosity similar to that of the NaX zeolite from the Na-10/30

Card 3/5

Studies on production...

(Na-10/30) glass. A number of investigations of the structure and adsorption of synthetic and natural zeolites was conducted at the Institute of Physical Chemistry, AS USSR under the direction of M. M. Dubinin. The distribution curves of the zeolite crystals were determined by the electron microscope investigation conducted by V. M. Luk'yanovich. D. P. Timofeyev studied the kinetics of steam adsorption, A. V. Kiselev the adsorption of nitrogen, benzene vapors and hexane on the molecular sieves NaA and CaX as well as the adsorption of benzene and n-hexane and their mixtures on the molecular sieve CaA. X-ray photographic investigations were made under the direction of N. A. Shishakov. Studies conducted under the direction of I. Ye. Neymark at the Institute of Physical Chemistry, AS USSR showed that the equilibrium adsorption on zeolites is well described by the potential theory, and that the thermal stability of zeolites drops in the sequence CaA>KA>NaA>NH_4A. The properties of Soviet and American molecular sieves during drying of gases were compared at the Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institute imeni Lensovet) under the direction of T. G. Plachenov and G. M. Belotserkovskiy. Studies on the drying and purification of gases by means of molecular sieves were conducted at the Moskovskiy khimiko-

Card 4/5

Studies on production...

tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev) under the direction of N. S. Torocheshnikov and N. V. Kel'tsev, and by V. S. Vinogradova, L. S. Kofman and Ya. V. Mirskiy. In 1960 the Zeolite Commission held three meetings (in Moscow, Leningrad, and Groznyy) in the form of scientific colloquia with 120 - 150 participants. There are 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The two references to English-language publications read as follows: R. M. Barrer, Brit. Chem. Eng., No. 5, 1 (1959) and US Patents 2882243, 2882244, 1959.

Card 5/5

26520
S/065/61/000/008/003/009
E030/E135

11.0140

AUTHORS: Rogov, S.P., Gol'dshteyn, D.L., Osipov, L.N., and Agafonov, A.V.

TITLE: Hydrofining the high-sulphur kerosine-gas oil fraction of Arlan crude

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1961, No.8, pp. 13-19

TEXT: The preparation of satisfactory diesel fuels from Arlan crudes has been investigated by VNII NP. In the laboratory straight fractions were hydrofined; this process lowers the flash point and it was found necessary to remove subsequently the fractions boiling up to 180 °C to keep the flash point in the 60-65 °C region. However, the diesel fuel then fails specification ГОСТ 4749-49 (GOST 4749-49) and 305-58, on pour point (-9 °C instead of -10 °C). However, hydrofining cat. cracked products gives satisfactory diesel fuels, and it is recommended that these be blended with the straight run components. In order to increase the output of the benzine fractions, without raising the diesel pour point, hydrofining experiments were then conducted on a

Card 1/2

Hydrofining the high-sulphur ....

tungsten-nickel oxide catalyst at 300 atmospheres pressure. One can then obtain about 20% benzine and 80% diesel fuel, the latter being of satisfactory quality. However, the benzine octane number is only about 50 and it should be used either for motor spirit blending or for further platinum reforming.
There are 6 tables, and 3 Soviet references.

ASSOCIATION: VNII NP

Card 2/2

GLIKMAN, L.S.; BOCHAROV, I.V.; VIKHMAN, G.L.; ABROSIMOV, B.Z.; KIRILOV, Ye.A.; MEL'NIKOV, S.M.; AGAFONOV, A.V.; SOSKIND, D.M.

Rebuilding catalytic cracking units with a combined reactor-regenerator. Khim. i tekh. topl. i masel 6 no.11:6-10 N '61. (MIRA 14:12)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut neftyanogo mashinostroyeniya.
(Cracking process)

128

PHASE I BOOK EXPLOITATION SOV/6246

Soveshchaniye po tseolitam. 1st, Leningrad, 1961.

Sinteticheskiye tseolity; polucheniye, issledovaniye i primeneniye (Synthetic Zeolites: Production, Investigation, and Use). Moscow, Izd-vo AN SSSR, 1962. 286 p. (Series: Its: Doklady) Errata slip inserted. 2500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk. Komisiya po tseolitam.

Resp. Eds.: M. M. Dubinin, Academician and V. V. Serpinskiy, Doctor of Chemical Sciences; Ed.: Ye. G. Zhukovskaya; Tech. Ed.: S. P. Golub'.

PURPOSE: This book is intended for scientists and engineers engaged in the production of synthetic zeolites (molecular sieves), and for chemists in general.

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Synthetic Zeolites: (Cont.) SOV/6246

COVERAGE: The book is a collection of reports presented at the First Conference on Zeolites, held in Leningrad 16 through 19 March 1961 at the Leningrad Technological Institute imeni Lensovet, and is purportedly the first monograph on this subject. The reports are grouped into 3 subject areas: 1) theoretical problems of adsorption on various types of zeolites and methods for their investigation, 2) the production of zeolites, and 3) application of zeolites. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

Synthetic Zeolites: (Cont.) SOV/6246

S/065/62/000/006/004/007
E194/E436

AUTHORS: Manshilin, V.V., Manakov, N.Kh., Igafonov, A.V., Vasilenko, V.P., Maslov, I.Ya., Knyazev, V.S.

TITLE: Testing of engineering development of a new system for fluid catalytic cracking

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.6, 1962, 41-50

TEXT: To prevent spontaneous afterburning of carbon monoxide and other combustible gases which can occur in the regenerators of fluid catalytic crackers, damaging the cyclone and causing other faults, the regenerator temperature is kept below 600°C, though in many respects it would be advantageous to raise it to 650°C. To achieve this the free oxygen content of the gas in the regenerator must be reduced by raising the level of coking of the catalyst, by greatly improving the contact between air and catalyst or by a combination of these two methods. A regenerator which achieves this combined effect is the main feature of the system here described. The construction of a pilot plant reactor unit which includes the reactor, a turbulent scrubber, a regenerator and two pneumatic catalyst transport lines is

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described. The regenerator is a vertical cylinder with fireproof lining of 1400 mm internal diameter; it has a three stage cyclone in the upper part. Within the zone of the fluid bed is an inner hollow steel cylinder 600 mm diameter containing cooling coils with air distribution arrangements. The spent catalyst is delivered to the annular zone of the regenerator and, under conditions close to those of ideal mixing, sufficient coke is burned to maintain the temperature in this zone at about 600°C. Because of the intensive mixing there is little local overheating. Combustion of the coke is completed in the control zone and the temperature of the catalyst leaving the lower part of the zone for the reactor can be controlled by the cooling coil. The regeneration process is split into these two stages to improve combustion of the coke. Most of the coke is removed in the first zone, where the mean content of coke on the catalyst is high, the combustion being intensified by the counter current conditions and most of the oxygen used up. Operating conditions are given for the various parts of the unit and the results obtained provide all the necessary data for designing full-scale industrial plant with

Card 2/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100420019-4"

Testing of engineering ...

reactor and regenerator at the same high level using pneumatic transport of [illegible] (PVK). The two-stage and three-stage cyclones in the reactor and regenerator respectively gave satisfactory retention of catalyst dust and returned it to the fluid bed. There are 5 figures and 5 tables.

ASSOCIATION: VNII NP

Card 3/3

S/282/63/000/002/003/005
A059/A126

AUTHORS: Kurganov, V. M., Gonsales, M. A., Agafonov, A. V.

TITLE: Methods of supplying stocks to a reactor of catalytic cracking

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk, 47. Khimicheskoye i kholodil'noye mashinostroyeniye, no. 2, 1963, 33, abstract 2.47.186 (Novosti neft. u gaz. tekhn. Neftepererabotka i neftekhimiya, no. 8, 1962, 15 - 21)

TEXT: Stock feeding to the reactor by single vapor-liquid flow has considerable advantages over the separate feeding of the liquid and vapor phases to the reactor, greatly simplifies the operation and reduces the operating expenses of stock preparation. The contacting method based on spraying of the liquid phase over the surface of the catalyst layer is the most unsuitable of all known methods, since it does not exclude coking of the internal surfaces and conglomerate formation. The utilization of any cross section of dropping catalyst film for contacting with the stock creates a uniform distribution of the liquid residue on the greater part of the catalyst, but does not exclude coking of the

Card 1/2

Methods of supplying stocks to a...

reactor. The most advantageous of the alternatives considered is the setup based on the method of phase contacting under restricted conditions on moving in the suspended state below the distributing plate (model ВНИИНП - К-18 (VNIINP-K-18)). Fitting out the reactors of catalytic-cracking devices with an inlet assembly for the stock according to the model VNIINP-K-18 permits: to process heavy petroleum stocks without coking of the reactor and conglomerate formation; to increase the yield of light petroleum products by 3 to 5%, to reduce catalyst consumption by 0.5 to 1.5 kg/t of the stock; to reduce the temperature of the stock on discharge from the furnace from 480 - 490°C to 420 - 450°C; to prolong the time of passage through the setups and to stabilize their capacity during the whole cycle; to eliminate laborious and dangerous work involving the removal of coke from the internal surface of the reactor. There are 4 figures and 8 references.

[Abstracter's note: Complete translation]

Card 2/2

L 12295-63

S/031/63/000/005/052/075

44

AUTHOR: Kozlov, G. N. and Agafonov, A. V.

TITLE: A study of the regeneration process of alumo-silicate cracking catalyst

PERIODICAL: Referativnyy zhurnal, Khimiya, no. 5, 1963, 500, abstract 5P156, (Tr. Vses. n.-i in-t, po pererabotke nefti i gaza i polucheniyu isskust-b. zhidk. topliva, no. 8, 39-53) 1962

TEXT: Investigation of the regeneration process of alumosilicate catalysts by air in the temperature range of 500-680°C was conducted on laboratory apparatus with 15 g capacity of the reaction tube for catalyst. Upon introduction of air at a rate of 70 l/hr the regeneration gases were purified from moisture, the CO was oxidized to CO_2 and the latter was absorbed by ascarite. The results of this operation may be judged from the rate of formation of CO and CO_2. The investigation was conducted under kinetic as well as diffusion areas of reaction path, temperature limits of which were previously determined. Catalysts with wide spaced pores and large internal surfaces are easier to regenerate. The rate of regeneration depends on the nature, the chemical composition and the structure of the catalysts. In this process the effect of structural characteristics of the catalyst are

Card 1/2

L 12295-63 S/081/63/000/005/052/075

A study of the regeneration ....

manifested mainly in the diffusion area. A catalyst which is coked in cracking of petroleum is easier to regenerate than one used in cracking light or heavy sulfur-containing raw materials. The use of this method is proposed for standard determination of the regenerative characteristics of granular alumo-silicate catalysts, with measurement of speed of the process at two temperatures, corresponding to the kinetic and diffusive areas of the reaction path. The article contains a 25-item bibliography. V. Kel'tsev.

[Abstractor's note: Complete translation]

Card 2/2

AGAFONOV, A. V.

"Production of high-grade petroleum oils and waxes by hydrogenation"

report to be submitted for the Sixth World Petroleum Congress, Frankfurt am Main, W. Germany, 19-26 Jun 63.

S/065/63/000/001/004/005
E075/E436

AUTHORS: Morozov, V.I., Agafonov, A.V., Abayeva, B.T., Ryabov, V.A., Karpenko, L.P., Gilyazetdinov, L.P.

TITLE: The preparation of feedstock carbon black in thermal cracking units

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.1, 1963, 39-42

TEXT: A threefold increase in the production of carbon black is scheduled in the current 7-year plan. New feedstocks suitable for conversion into carbon black are therefore required to supplement green and anthracene oils used at present. Catalytic gas oils and lubricating oil extracts (phenol extracts) were subjected to thermal cracking to produce oils suitable for the production of carbon black. The cracked oils (43.5, 36.0 and 54.4% yields of the feedstock for light gas oil, heavy gas oil and phenol extract respectively) contained from 70 to 80% of aromatic hydrocarbons, of which at least 50% were heavy aromatics. The cost of these oils was about half that of green oil and a quarter of anthracene oil. The yields of carbon black from the oils ranged from 47 to

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56.7%, which compares well with the yields from green oils. The carbon blacks satisfy the ГОСТ 7885-56 (GOST 7885-56) specification. There are 1 figure and 4 tables.

ASSOCIATION: Omskiy Neftepererabatyvayushchiy zavod VNII NP
(Omsk Refinery VNII NP)

Card 2/2

S/065/63/000/003/001/006
E075/E436

AUTHORS: Rysakov, M.V., Agafonov, A.V., Gol'dshteyn, D.L., Osipov, L.N., Rogov, S.P., Khavkin, V.A.

TITLE: Hydrofining of diesel fuels with a considerable reduction of hydrogen consumption

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.3, 1963, 7-11

TEXT: In an attempt to refine sulphurous diesel fuels with a reduced quantity of hydrogen, a method was developed with the use of internal H_2 (autofining) as well as external H_2. It was applied to a 1:1 mixture of diesel fuel fractions from Arlan crude and catalytic gas oil from Romashkino crude. The method gave the optimum results at 30 kg/cm^2 and 400°C. Lowering the pressure to 22 kg/cm^2 does not affect the H_2 consumption. Increase of temperature to 420 - 440°C, although decreasing the H_2 consumption, may shorten the catalyst life (alumino-cobaltomolybdate). At 400°C and 30 kg/cm^2 the content of aromatics decreases to 16.3% from 21.6% with a simultaneous increase in the amount of naphthene-paraffins. The catalyst was used without losing its activity for 400 hours at a space velocity of 2.0 h^{-1}, temperature 400°C, pressure 30 kg/cm^2 and H_2 circulation of 300 m^3/m^3. The

Card 1/2

Hydrofining of diesel ...

consumption of H_2 was 0.2 to 0.3 wt.% of the diesel fuel. The refined fuel contained 0.12 to 0.13% S (originally 1.62%). There are 4 tables.

ASSOCIATION: VNII NP

MOROZOV, V.I.; AGAFONOV, A.V.; ABAYEVA, B.T.; KARPENKO, L.P.

Results of the industrial adoption of the production of crude for carbon black in thermal cracking devices. Neftepер. i neftekhim. no.4:18-21 '63 (MIRA 17:7)

1. Omskiy neftepererabatyvayushchiy zavod i Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo shidkogo topliva.

GONSALES, A.A.; KURGANOV, V.M.; AGAFONOV, A.V.; ABAYEVA, B.T.; POLETAYEV, V.B.; VIV'YER, A.S.; RUDOVICH, M.A.; BELYAYEVA, Z.G.; RUTMAN, G.I.

Results of redesigning an industrial catalytic-cracking device. Nefteper. i neftekhim. no.9:6-10 '63. (MIRA 17:8)

1. Salavatskiy kombinat i Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti.

AGAFONOV, A.V.; ABAYEVA, B.T.; OKINZHEVICH, N.A.

Catalytic cracking products for petrochemical syntheses.
Trudy VNII NP no. 9:27-51 '63. (MIRA 17:6)

VASIL'YEV, S.F.; AGAFONOV, A.V.

Obtaining high-octane gasolines. Nefteper. i neftekhim. no. 11:3-6 '63. (MIRA 17:5)

1. Institut goryuchikh iskopayemykh AN SSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.

ABAYEVA, B.T.; AGAFONOV, A.V.; GILYAZETDINOV, L.P.; GYUL'MISARYAN, T.G.; ZUYEV, V.P.; MOROZOV, V.I.

Testing thermocatalytic gas oil in the production of furnace black. Neftepер. i neftekhim. no.12:17-19 '63. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

MANSHILIN, V.V.; AGAFONOV, A.V.; MANAKOV, N.Kh.; VASILENKO, V.P.; MASLOV, I.Ya.; KNYAZEV, V.S.; STEPANENKO, I.A.; Prinimali uchastiye: VAYL', Yu.K.; NEMETS, L.L.; BELOUSOVA, I.V.; STOLYARENKO, Ye.G.; YEMEL'YANOV, A.A.; RYABOV, V.M.; BEREZOVSKIY, V.D.; ZEFIROVA, Ye.G.; CHELOGUZOVA, Ye.F.; SOLOTSINSKIY, S.Ye.; BOL'SHAKOVA, K.A.; KHRAMOV, A.Ye.

Catalytic cracking of raw heavy distillates on a microspheric catalyst of Troshkovskiy clay. Khim. i tekh. topl. i masel. 8 no.3:1-6 Mr '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva. (Cracking process) (Catalysts)

AGAFONOV, A.V.; ABAYEVA, B.T.; OKINSHEVICH, N.A.; ANDREYEVA, A.S.; MOROZOV, V.I.

Developing extraction methods for obtaining carbon black stock from catalytically cracked gas oils. Khim. i tekh. topl. i masel 9 no.5:13-16 5 My'64 (MIRA 17:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.

AGAFONOV, A.V.; [illegible], B.T.; OKHOBOTOV, N.A.; [illegible], F.M.; FILIMONOV, V.F.; LYSAKOV, G.A.; [illegible], L.B.; [illegible], S.A.; KUREVSKIY, I.S.

Obtaining raw stock for the production of active carbon black by extraction with the selective solvents of the gas oils of catalytic cracking. Khim. i tekh. topl. i masel 9 no.7:36-39 Jl '64.
(MIRA 17:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy [illegible] po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.

OSIPOV, L.N.; AGAFONOV, A.V.; KHAVKIN, V.A.; ROGOV, S.P.

Effect of nitrogen compounds on the hydrocracking of heavy distillates. Khim. i tekh. topl. i masel 10 no.8:1-4 Ag '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gazov i polucheniyu iskusstvennogo zhidkogo topliva.

L 49791-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(k)/EWA(h) Pf-4/Pg-4/
Peb IJP(c) WW/EM

ACCESSION NR: AP5010189 UR/0373/65/000/001/0148/0150

AUTHOR: Agafonov, A. V. (Leningrad)

TITLE: Action of suddenly applied concentrated force on a cylindrical shell

SOURCE: AN SSSR. Izvestiya. Mekhanika, no. 1, 1965, 148-150

TOPIC TAGS: shell theory, partial differential equation, Fourier transform, integral transform

ABSTRACT: A simple asymptotic solution was obtained for small times t describing the deflection of an infinite cylindrical shell under a suddenly applied concentrated load. The governing differential equation is given by

$$\frac{Eh^3}{12(1-\mu^2)}\Delta^2\left(\Delta+\frac{1}{a^2}\right)^2 w+\frac{Eh}{a^2}\frac{\partial^4 w}{\partial x^4}+\rho h\frac{\partial^2\Delta^2 w}{\partial t^2}=\Delta\left(\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial\theta^2}\right)\delta.$$

A double Fourier integral transform is used, in x and in θ, to solve the above equation with zero initial condition and a zero boundary condition at infinity. The solution for the shell deflection is then given by

Card 1/2

L 49791-65
ACCESSION NR: AP5010189

$$w_0 = \frac{\pi}{2}\int_0^{2\pi} d\varphi \int_0^{\gamma} J_0(\cos^3\varphi\tau)\, d\tau -$$

$$-\int_0^{2\pi} d\varphi \int_0^{\gamma} d\tau \int_0^{\tau} J_0\left(\cos^3\varphi \sqrt{\tau^2 - z^2}\right) \frac{\sin \gamma z}{2z}\, dz$$

where the second terms represents the correction to the deflection itself, as is obtained in the theory of thin shells. The result shows that, at least up to $\gamma = 0.1\,\gamma^{-1}$, this correction is of the order γ and hence is negligible. In the above result

$$\tau = \frac{\sqrt{E}}{a}\,.$$

Orig. art. has: 14 equations and 1 figure.

ASSOCIATION: none

SUBMITTED: 27May64 ENCL: 00 SUB CODE: MP

NO REF SOV: 003 OTHER: 003

Card 2/2

L 53663-65 EWT(m)/EPF(c)/T Pr-4 DJ

ACCESSION NR: AP5013515 UR/0319/65/000/005/0006/0008
665.53...4

AUTHORS: Dets, M. M.; Agafonov, A. V.

TITLE: Obtaining oil fractions with a high viscosity index by deep hydrogenation of crude oil

SOURCE: Neftepererabotka i neftekhimiya, no. 5, 1965, 6-8

TOPIC TAGS: lubricating oil, lubrication, lubricant viscosity, hydrogenation, oil, solvent action / 3076 sulfide nickel tungsten catalyzer, TsIATIM 58 hydrogenation apparatus

ABSTRACT: The effect of deep hydrogenation on two types of crude (the straight distillation fraction and the gas oil fraction of the catalytic cracking) was studied in an effort to obtain lubricants with the viscosity of 4 and 8 centistoke at 50C. A commercial sulfide-nickel-tungsten catalyzer (3076) was used in all the experiments (pressure of 300 atm and hydrogen cycling 1200-1500 nm^3/nm^3 of crude). High aromatic gas oil fractions were hydrogenated in two stages to lower the reaction heat. Conditions for the hydrogenation of primary and secondary crudes are tabulated. Paraffin was removed from the fractions obtained in the TsIATIM-58

Card 1/2

L 53663-65
ACCESSION NR: AP5013515

hydrogenation device by selective solvents. Optimal deparaffinization conditions were as follows: solvent—methyl-ketone and toluene (60:40% by vol); the solvent-crude ratio—5:1 by weight; cooling temperature from [illegible]. The output of the lube oils at +50C and -40C from the straight distillation crude was higher than that from gas oil. The hydrogenation of narrow fractions resulted in an increased production of oils of similar qualities. Best quality lube oils with viscosity 4 centistoke at 50C were obtained by hydrogenation of crudes with boiling points 300-350C at negative temperatures and under less stable conditions, while the processing of crudes with higher boiling points required more stable hydrogenation conditions for the same [illegible] tables.

ASSOCIATION: VNIINP

SUBMITTED: 00 ENCL: 00 SUB CODE: FP

NO REF SOV: 000 OTHER: 000

Card 2/2

L 58285-65 EWT(m)/EPF(c)/T Pr-4 WE

ACCESSION NR: AP5016198 UR/0318/65/000/006/0029/0032

543.2.665.4

AUTHORS: Dets, M. M.; Agafonov, A. V.

TITLE: Viscosity-temperature characteristics of low solidifying lube oil fractions obtained by hydrogenation

SOURCE: Neftepererabotka i neftekhimiya, no. 6, 1965, 29-32

TOPIC TAGS: petroleum, hydrogenation, paraffin hydrocarbon, naphthenic ring, temperature, viscosity

ABSTRACT: The effect of hydrogenation intensity on viscosity and temperature of lube oil fractions with 8,0 centistoke at 50C and low viscosity at negative temperatures was studied on three fractions of the Romashkinskaya oil: Nos. 1 and 2 obtained at 350-400C and No. 2 at 300-400C. Two catalysts were used: (8376)—[illegible] of aluminum oxide. [illegible] were separated from the [illegible] were obtained by the adsorption separation of the 350-400C fraction on silica [illegible] in an effort to clarify the destructive hydrogenation mechanism. The

Card 1/3

characteristics of the crudes, the hydrogenates, the paraffin-naphthenic hydrocarbons and the experimental conditions [illegible] was noted that transformations of the paraffin-naphthene hydrocarbons in the hydrogenation process were very important for the end results (their viscosities being equal at 50C differed at negative temperatures). [illegible] at a higher reaction temperature [illegible] separation of [illegible]

[illegible] hydrocarbons concentrate [illegible] than the initial fraction. At higher [illegible] the polycyclic hydrocarbons [illegible] with a smaller number of [illegible] hydrocarbons.

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L 58285-65
ACCESSION NR: AP5016198

2

This transformation scheme was sustained by the mass-spectral analysis of the paraffin-naphthene hydrocarbons made according to the n-d-m method. The analysis was carried out in the laboratory under the leadership of K. I. Zimina. Orig. art. has: 3 tables.

ASSOCIATION: VNIINP

SUBMITTED: 00 ENCL: 00 SUB CODE: FP

NO REF SOV: 003 OTHER: 001

Card 3/3

L 27931-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/WE

ACC NR: AP6017743 SOURCE CODE: UR/0065/65/000/008/0001/0004

AUTHOR: Osipov, L. N.; Agafonov, A. V.; Khavkin, V. A.; Rogov, S. P.

ORG: VNII NP

TITLE: Effect of nitrogen compounds on hydrocracking of heavy distillates

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 8, 1965, 1-4

TOPIC TAGS: organic nitrogen compound, catalytic cracking, hydrogenation, gasoline, petrochemistry

ABSTRACT: The main results of studies on the effect of organic nitrogen compounds on the yield and quality of two-stage hydrocracking products are presented. A bifunctional catalyst on a carrier with increased acidity served as the catalyst of the second stage. The experiments were carried out on laboratory circulating high pressure equipment with a 160 ml catalyst charge. The hydrogen content in the circulating gas was 90-95%, by volume. The original crude for the second hydrocracking stage consisted of products of the hydrogenation of vacuum gas oil of a mixture of eastern sulfur-containing petroleum stocks on an alumina-cobalt-molybdenum catalyst at 425°C, the space velocity of the crude was 1 hour^{-1}, and the hydrogen pressures were 50, 150 and 250 atmospheres, which made it possible to produce 3 hydrogenates with different nitrogen contents. The experiments on hydrocracking of crude containing 0.06, 0.01, and less than 0.01% nitrogen on a bifunctional

Card 1/2 UDC: 665.554:661.5

L 27931-66

ACC NR: AP6017743 0

catalyst showed that nitrogen has a substantial effect on the activity and stability of the second stage catalyst of the process. The deactivating effect of nitrogen when its content in the crude was 0.01% and less can be eliminated by increasing the total pressure to 150 atmospheres; the duration of the reaction cycle here was not less than 1400 hours. Two-stage hydrocracking makes it possible to obtain gasoline with an octane number of about 76 and diesel fuel with a cetane number of 50-55. Orig. art. has: 3 figures and 2 tables. [JPRS]

SUB CODE: 11, 07 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 019

Card 2/2 BLG

L 46019-66 EWT(m)/T WE

ACC NR: AP6021342 (A) SOURCE CODE: UR/0318/66/000/002/0008/0010

AUTHOR: Osipov, L. N.; Agafonov, A. V.; Rogov, S. P.

ORG: VNIINP

TITLE: Production of motor fuels by a two-stage hydrocracking of the vacuum distillate

SOURCE: Neftepererabotka i neftekhimiya, no. 2, 1966, 8-10

TOPIC TAGS: catalytic cracking, motor vehicle gasoline, diesel fuel

ABSTRACT: The article describes the results of a two-stage hydrocracking of the vacuum distillate of eastern sulfur-bearing crudes which boils in the 350-500° range, with the use of an aluminum-cobalt-molybdenum catalyst in the first stage and of a special bifunctional catalyst in the second stage. Experiments performed on laboratory units produced good results with a satisfactory removal of nitrogen, sulfur, and other undesirable components in the first stage and high yields of motor fuels in the second stage. A distinctive feature of the second stage is the possibility of controlling the selectivity of the hydrocracking (production of either mostly gasoline or mostly diesel fuel) by varying the temperature and the volume feed rate of the stock over relatively narrow limits. All the gasoline fractions obtained had a low content of unsaturated and aromatic hydrocarbons and consisted mainly of naphthenes, isoparaffins, and n-paraffins. The diesel fuel obtained had a cetane rating of 50 and met

Card 1/2 UDC: 665.644.092.57:662.753

L 46019-66

ACC NR: AP6021342

all the GOST requirements for a low-sulfur summer diesel fuel. Orig. art. has: 1 figure and 3 tables.

SUB CODE: 21/ SUBM DATE: none

Card 2/2

L 45674-66 EWT(m)/T WE

ACC NR: AP6023622 SOURCE CODE: UR/0318/66/000/004/0012/0015

AUTHOR: Agafonov, A. V.; Osipov, L. N.; Rogov, S. P.; Uzunkoyan, P. N.; Finelonov, V. P.; Zhandanovskiy, N. B.; Perezhigina, I. Ya.; Kel'man, I. V.; Pisarchik, A. N.; Afanas'yev, V. I.; Khavkin, V. A.; Laz'yan, N. G.

ORG: All-Union Scientific Research Institute of Petroleum Refining (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti); Novokuybyshev Petroleum Refinery (Novokuybyshevskiy neftepererabatyvayushchiy zavod)

TITLE: Experience with catalytic hydrocracking of vacuum distillate on the hydrofining assembly of the Novokuybyshev Petroleum Refinery

SOURCE: Neftopererabotka i neftekhimiya, no. 4, 1966, 12-15

TOPIC TAGS: catalytic cracking, petroleum product, gas oil fraction, diesel fuel, gasoline

ABSTRACT: The VNIINP has developed a variant of the process for producing diesel fuel involving one-step hydrocracking of sulfur-containing vacuum distillates on an aluminum-cobalt-molybdenum catalyst. The results of laboratory experiments with this variant were sucessfully applied at the experimental industrial hydrofining assembly of the Novkuybyshev Petroleum Refinery. The operation of the hydrocracking assembly is described. The feed stock for the plant hydrocracking was vacuum gas oil obtained from distillation of sulfur feed stock. Distillation of the hydrogenate produced:

Card 1/2 UDC: 665.644.2.048.5:665.658.2

L 45674-66

ACC NR: AP6023622

diesel oil which met all the requirements of GOST 4749-49 for DL grade; a gasoline fraction characterized by a low sulfur content (0.002-0.03), a relatively heavy fractional composition (melting range 120-180°), and a low octane number (42), and is recommended as feed stock for catalytic reforming; the gaseous products methane (49.2 wt. %), ethane (29.4%), propane (17.8%) and butanes (3.65). The residue of the distillation of fuel fractions is recommmended as feed stock for catalytic cracking. It is concluded that the hydrocracking of vacuum gas oil on the hydrofining assembly of NKNPZ confirmed the results of work carried out by the VNIINP on pilot plants for the purpose of designing high-capacity units. Orig. art. has: 1 figure and 2 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 003

Card 2/2 fv

ACC NR: AP6032842 (A,N) SOURCE CODE: UR/0065/66/000/010/0015/0018

AUTHOR: Pereshigina, I. Ya.; Agafonov, A. V.; Rysakov, M. V.; Osipov, L. N.; Rogov, S. P.

ORG: VNIINP

TITLE: Study of the fundamentals of hydrocracking of a heavy distillate with high sulfur content

SOURCE: Khimiya i tekhnologiya topliv, i masel, no. 10, 1966, 15-18

TOPIC TAGS: petroleum refinery product, petroleum refining gasoline, liquid fuel, diesel oil, desulfurization

ABSTRACT: A study of hydrocracking of high-sulfur vacuum distillate (2.16 wt % S, 0.1 wt % N, 0.9163 specific gravity, and containing 50% aromatics and 50% paraffins and naphthenes) over Co-Mo/alumina catalyst at 50-250 atm, 380-425°C, 0.5-6.0 hourly volume space velocity, and a hydrogen to feed volume ratio of 300-1500 was made. The object of the work was to define the optimal process condition for the greatest yield of low-sulfur diesel oil fraction. It was found that in the 600-1500 range of H_2:feed ratio, the H_2:feed ratio did not affect the hydrocracking process. It was also found that the optimal conditions leading to 30-45% yield of low-sulfur diesel oil and very low yields of gas and gasoline fraction are: 50 atm, 400-425°C, and 1-2 hourly volume space ve-

UDC: 665.534:665.521.4

Card 1/2

ACC NR: AP6032842

locity. Under these process conditions, the life of the catalyst was found to be at least three months. Orig. art. has: 3 figures, 3 tables.

SUB CODE: 07,21/ SUBM DATE: none

Card 2/2

DRUYANOV, Lev Aleksandrovich; PANTSKHAV, I.D., prof., red.;
AGAFONOV, A.Ye., red.; ZYKINA, T.N., tekhn. red.

[What matter is] Chto takoe materiia. Pod red. I.D. Pantskhava. Moskva, Uchpedgiz, 1961. 80 p. (MIRA 15:10)

(Matter--Constitution)

RAYSKIY, Boris Fedorovich; AGAFONOV, A.Ye., red.; KREYS, I.G., tekhn. red.

[Technical and work training of the senior grade students] Politekhnicheskaia i trudovaia podgotovka uchashchikhsia starshikh klassov. Moskva, Uchpedgiz, 1963. 166 p. (MIRA 17:3)

SOLOV'YEV, Aleksandr Fedorovich; AGAFONOV, A.Ye., red.; KREYS, I.G., tekhn. red.

[Work training of grade 5-8 students; from the rural school practice of Ul'yanovsk Province] Trudovoe vospitanie uchashchikhsia V - VIII klassov; iz opyta raboty sel'skikh shkol Ul'ianovskoi oblasti. Moskva, Uchpedgiz, 1963. 165 p. (MIRA 17:1)

AGAFONOV, B.; RABANSKIY, I.

Organization of work and students' wages in school brigades.
Politekh. obuch. no.7:89 Jl '59. (MIRA 12:9)

1.Kirovogradskiy oblastnoy institut usovershenstvovaniya uchiteley.
(Kirovograd Province--Agriculture--Study and teaching)

21.4500

31455
S/626/60/000/012/010/010
D298/D303

AUTHORS: Agafonov, B. M., Dolgikh, T. I., Savchenko, M. I., and Timofeyev-Resovskiy, N. V.

TITLE: Distribution of dispersed elements among the components of reservoirs. IV. Experiments on the distribution of strontium, ruthenium, cesium, cerium and an unseparated solution of uranium fragments in series of tanks

PERIODICAL: Akademiya nauk SSSR. Ural'skiy filial. Institut biofiziki. Trudy. no. 12. Moscow, 1960. Sbornik rabot Laboratorii biofiziki. no. 2: Problemy biofiziki, 238-271

TEXT: The article describes the results of experiments to study the biological purification of water from a weak solution of an unseparated mixture of uranium fragments, and biological purification from the four main components of this mixture: Strontium-90, ruthenium-106, cesium-137 and cerium-144. The aim of the work was to discover possible differences in the degree of deactivation of the

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Distribution of dispersed ...

water from the above-mentioned chemical elements under the same experimental conditions and also to determine similarities and differences in the distribution of these elements among the main components of the reservoirs. The method consisted in passing solutions of the isotopes through a series of small aquarium tanks containing earth, water plants and appropriate microplankton and periphyton. Experiments with strontium showed that with a daily flow of 6 liters of a solution with a concentration of 10 μc/l, the concentration of strontium at the end of the tank series is 4.5 - 10.8% of the original concentration. By decreasing the daily flow of solution to 3 liters and by increasing the size of the first tank the water is deactivated of strontium. Strontium was found to be distributed evenly among the components of the tanks. With a flow of 6 liters/day the concentration of ruthenium at the end of the tank series is 1.5 - 2.5% of the original concentration. Study of its distribution among the components of the tanks showed that it was absorbed mainly by the biomass. In the experiments with cesium, complete deactivation of the water was achieved. Cesium was mainly

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Distribution of dispersed ...

absorbed by the ground material in the tanks. With a flow of 6 liters/day complete deactivation of cerium was also attained. Decrease in the daily flow of solution and an increase in the size of the first tank made no essential difference to the results of the experiments. Cerium, like ruthenium, was mainly absorbed by the biomass. A high degree of deactivation was achieved in experiments with an unseparated solution of uranium fragments. The longer the experiment continued, the less was the deactivation of the water. By reducing the flow of the solution to 3 liters/day and by increasing the volume of the first and last tanks, a high degree of deactivation was achieved, even in protracted experiments (more than 6 months). The coefficient of accumulation was highest in the periphyton and detritus, lower in the higher plants and lowest in the ground material. Of the elements studied the highest coefficient of accumulation in the biomass was given by cerium, and the lowest by strontium. In the ground material the highest coefficient of accumulation was given by cesium and the lowest by ruthenium. On the basis of the results the authors divide the radioactive elements studied into three main groups according to their

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Distribution of dispersed ...

distribution among the various components of reservoirs: Evenly distributed (strontium), mainly sorbed by the ground material (cesium), absorbed mainly by the biomass (ruthenium, cerium and an unseparated solution of uranium fragments). There are 12 figures, 41 tables and 3 Soviet-bloc references.

Card 4/4

AGAFONOV, B.M.; DOLGIKH, T.I.; SAVCHENKO, M.I.; TIMOFEYEV-RESOVSKIY, N.V.

Distribution of scattered elements in different components of water reservoirs. Report No.4: Experiments on the distribution of strontium, ruthenium, cesium, cerium, and the unseparated solution of uranium fission fragments in a series of tanks. Trudy Inst. biol. UFAN SSSR no.12:238-277 '60. (MIRA 14:1)
(Radioactive substances) (Water--Pollution)

29421
S/081/61/000/017/062/166
B110/B138

21.4500

AUTHORS: Timofeyeva-Resovskaya, Ye. A., Agafonov, B. M., Timofeyev-Resovskiy, N. V.

TITLE: Biological soil deactivation of water

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 302, abstract 17И321 (Tr. In-ta biol. Ural'skiy fil. AN SSSR, no. 13, 1960, 35-48)

TEXT: The investigations were carried out on laboratory filters, in pools and in aquariums with weak current. On an average, the following was retained in filters (filtering rate 0.6 m/hr) filled with mud, clay, activated carbon etc. (in %): Cs = 100; Sr and Y = 99; a mixture of Nb, Zr, Ce and U fragments = 80 - 90; Ru = 60 - 70. Optimum deactivation was observed with natural mud (no active solution passed when some hundreds of volumes of a solution with a concentration of 10 - 20 μCu/l were filtered). The accumulation coefficients were calculated. For higher aquatic plants they are 10^2-10^3, for large water invertebrates 10^2-10^3, for small cr:s

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B110/B138

Biological soil deactivation of water

(zoo- and phytoplankton and periphyton) 10^3-10^4. In experiments made in pools a 90 % water deactivation was attained. When a uranium solution with a concentration of 10 μCu/l was passed through three successive pools, 99 % of the initial activity were kept back. The activity in the concentration of 10^{-6} - 10^{-4} μCu stimulates the development of fresh water biocoenosis and of the microflora of the soil and the water.
[Abstracter's note: Complete translation.]

Card 2/2

TIMOFEYEVA-RESOVSKAYA, Ye.A.; AGAFONOV, B.M.; TIMOFEYEV-RESOVSKIY, N.V.

Fate of radioisotopes in the bodies of water. Trudy Inst.biol. UFAN SSSR. no.22:49-67 '62. (MIRA 16:3)
(RADIOISOTOPES) (WATER--POLLUTION)

AGRE, A.L.; AGAFONOV, B.M.

Some data on the migration of cesium and strontium radioisotopes from reservoirs with slow circulation. Report No.1. Biul.MOIP. Otd.biol. 67 no.3:154-155 My-Je '62. (MIRA 15:11)
(Radioisotopes) (Water--Purification)

AGAFONOV, B.N.

"Some Experiments in Biological Deactivation of Water Laboratory Experiments in a Series of Tanks." p. 54

Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii (Voprosy Gigiyeny i Dozimetrii) Medgiz, 1957, Moscow Russian, DK.

Proceedings of the All-Union Conference on Medical Radiology (Hygienic and Dosimetric Problems).

AGAFONOV, B.S.

Load characteristics of modern oscillator tubes. Radiotekhnika 8 no.4:13-19 Jl-Ag '53. (MIRA 11:6)
(Electron tubes) (Oscillators, Electron-tube) (Radio, Shortwave)

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Agafonov, B.S.

Teoriya i raschet radiotelegrafnykh rezhimov generatornykh lamp (Theory and Calculation of Radiotelegraph Operating Conditions for Oscillator Tubes) Moscow, Izd-vo "Sovetskoye Radio", 1954. 534 p. Number of copies printed not given.

Eds.: Shamshur, V.I. and Dikareva, A.I.; Tech. Ed.: Koruzev, N.N.

PURPOSE: The monograph is intended for radio engineers and radio technicians as a manual on oscillator tube characteristics and operating conditions.

COVERAGE: The book attempts to create methods of calculating radiotelegraph operating conditions for newly-developed oscillators. Only such oscillators are described, the design of which has recently been greatly improved. Tubes with a screen grid (pentode or beam tetrode) and an oxide-coated cathode or with a cathode of thoriated carbide tungsten are the most widely used.

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