

BYDUS, Ya.F.; PUZITSKIY, K.V.; YERSHOV, N.I.; KAZANSKIY, D.A.

Catalytic polymerization of olefins. Report No.8: Polymerization of ethylene over a nickel - aluminosilicate catalyst. Izv.AN SSSR Otd.khim.nauk no.5:920-925 My '60. (MIRA 13:6)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo Akademii nauk SSSR.

(Ethylene) (Polymerization) (Catalysts)

YMERISOV, N. I., kand. tekhn. nauk

Calculating the amount of seepage through bedding sands.
Avt. dor. 23 no. 7:23-25 J1 '60. (MIRA 13:7)
(Soil percolation) (Road drainage)

81720
S/020/60/133/01/30/070
B011/B003

5.3831
AUTHORS:

Yershov, N. I., Eydus, Ya. T., Yerokhina, V. P.

TITLE:

Oxygen-initiated Polymerization of Ethylene by Heterogeneous Catalysis in the Presence of Hydrogen

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 1, pp. 108-111

TEXT: In a preceding investigation (Ref. 1) the authors have found that ethylene is polarized on a Co-clay catalyst during hydrogenation at 100°C. So far, such a polymerization had not been observed if the gas did not contain CO impurities. It was proved that polymerization at 100°C is not initiated by CO but by oxygen. This reaction is reduced by a rise in temperature, and is most vigorous between 100 and 120°C. It is additionally intensified by an increase in the oxygen content up to 2%. It does not take place in the absence of oxygen and hydrogen. In the article under review, the authors report on some results of this new reaction named in the title. The same apparatus and catalyst were used as in Refs 1 and 2. Table 1 lists the experimental results obtained at

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B011/B003

a ratio of 1:3.2 between C_2H_4 and H_2 . It may be seen that polymerization yields a gaseous dimer and up to 35% of liquid products (referred to the ethylene used). The waste gas contains 1-1.5% of CO. The authors assume that the said reaction is identical with the hydropolymerization of ethylene under the action of CO (Ref. 2). This was, however, not the case since the reaction did not give the highest yield between 190 and 200°C and was not intensified with rising CO concentration. Table 2 proves that this is the case with $C_2H_4 : H_2 = 1.1$ and an O_2 content of 2%. At the same time, the ethane yield rises from 45 to 79%. Experimental results obtained at different temperatures, which show the effect of CO addition upon polymerization and hydrogenation, are given in Table 3. The presence of CO and H_2O_2 in the waste gas and the reaction water of several experiments indicate that O_2 added to the reaction mixture reacted vigorously with the main components during the reaction. The authors assume that active surfaces are thus formed, which initiate the polymerization of ethylene. This is proved by the increasing quantity of

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reaction products with rising O_2 content at $100^\circ C$. From all this the authors conclude that the reaction named in the title is initiated by O_2 . The polymerization of ethylene in the presence of H_2 is not identical with the hydropolymerization under the action of CO . There are 1 figure, 3 tables, and 4 references: 3 Soviet and 1 German.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR (Institute of Organic Chemistry imeni
N. D. Zelinskiy of the Academy of Sciences, USSR)

PRESENTED: March 10, 1960, by B. A. Kazanskiy, Academician

SUBMITTED: March 8, 1960

Card 3/3

MYDUS, Ya.T.; PUZITSKIY, K.V.; YERSHOV, N.I.; KAZANSKIY, B.A.

Catalytic polymerization of olefins. Report No.10: Effect of the temperature and contact time on the course of ethylene polymerization on nickel catalysts. Izv.AN SSSR.Otd.khim. nauk no.6:1114-1118 J1 '60. (MIRA 13:7)

1. Institut organicheskoy khimii imeni N.D.Zelinskogo
Akademii nauk SSSR.
(Ethylene) (Polymerization) (Catalysts, Nickel)

S/062/60/000/007/015/017/XX
B004/B064

AUTHORS: Eydus, Ya. T., Puzitskiy, K. V., Yershov, N. I.,
Guseva, I. V., and Kazanskiy, B. A.

TITLE: Catalytic Polymerization of Olefins. Communication 11.
The Effect of Impurities in the Initial Gas and of the
Material of the Test Tube Wall Upon the Course of the
Polymerization Reaction of Ethylene on Nickel Catalysts

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
nauk, 1960, No. 7, pp. 1291 - 1294

TEXT: The authors are concerned with studying the effects of all
reaction conditions upon the catalytic polymerization of olefins. In
the present paper, they report on the effect of impurities in initial
ethylene, the influence exerted upon the catalyst by treating it with
various substances, and finally the effect exerted upon catalysis
by the material of the tube walls. Up to 5% propylene or up to 10%
butylene were added to ethylene as impurities. Ethylene was polymerized

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Catalytic Polymerization of Olefins. S/062/60/000/007/015/017/XX
 Communication 11. The Effect of Impuri- B004/B064
 ties in the Initial Gas and of the
 Material of the Test Tube Wall Upon the Course of the Polymerization
 Reaction of Ethylene on Nickel Catalysts

to butylene on a $\text{NiO-Al}_2\text{O}_3$ catalyst. While an addition of 0.5 to 3%
 impurities showed no effect, the activity of the catalyst decreased at
 higher amounts of admixtures (yield without addition: 82%, with an
 addition of 5%: 56.2%). An addition of 30 - 40% H_2 or preliminary
 treatment of the catalyst with H_2 (yield without H_2 : 58.8%, with H_2 :
 23.0%) showed the same effect. The water vapor content of ethylene
 also reduced the activity of the catalyst. On comparing the activity
 of the catalyst in test tubes of glass, brass, or stainless steel it
 was found that in the steel tube the yield in polymers and the regenera-
 tion capacity of the catalyst decrease: maximum yield in the glass
 and brass tubes 71.2%, in the steel tube 64.7%. There are 1 figure,
 5 tables, and 2 Soviet references.

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Catalytic Polymerization of Olefins. S/062/60/000/007/015/017/XX
Communication 11. The Effect of B004/B064
Impurities in the Initial Gas and of the
Material of the Test Tube Wall Upon the Course of the Polymerization
Reaction of Ethylene on Nickel Catalysts

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy
of the Academy of Sciences USSR)

SUBMITTED: November 12, 1958

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S/062/60/000/008/025/033/XX
B013/B055

AUTHORS: ~~Yershov, N. I.~~ Yerokhina, V. R., and Eydus, Ya. T.

TITLE: Catalytic Isomerization of Cyclopropane in Mixtures With Olefins

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 8, pp. 1495-1499

TEXT: In the present paper, the authors studied the effect of admixing cyclopropane to ethylene and propylene on their polymerization over various catalysts. Cyclopropane was prepared by the method described by G. G. Gustavson (Ref. 11). Quantitative determination of the propylene and cyclopropane mixtures was carried out by a method based on the selective absorption of propylene in a $KI-Br_2$ solution (Ref. 13). The apparatus and

experimental technique was the same as in Ref. 15. The following catalysts were applied: Cobalt on alumina (Ref. 16) (I), silica gel (II), cobalt/silica gel (III), aluminum silicate (IV), and cobalt/aluminum silicate (V). On catalyst (I), neither ethylene nor propylene formed liquid polymerization products at 300°C and below. Addition of cyclopropane (7 - 30%) to

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Catalytic Isomerization of Cyclopropane
in Mixtures With OlefinsS/062/60/000/008/025/53/XX
B013/B055

ethylene produced only slight formation of liquid polymerizates. The yield was less than 1% of the initial ethylene and 9 - 43% of the added cyclopropane. The latter was isomerized only up to 20% (Table 1). In experiments with propylene (Table 2), the portion of reacted cyclopropane was lower (5 - 15%). The data listed in the table show that liquid polymerizates are formed in small quantities, or not at all, when cyclopropane is added to ethylene or propylene. The cyclopropane is isomerized only slightly, only up to 20%. In the presence of hydrogen, the yields of liquid hydropolymerizates of ethylene, obtained with and without addition of cyclopropane, did not exceed 4.1% of the initial alkene. The addition of cyclopropane did not affect the yield. 33 - 57% of the cyclopropane entered into reaction, i.e., a much higher percentage than in the absence of hydrogen. No liquid polymerizates were formed in experiments employing catalysts containing silica gel, (II) and (III). Neither propylene polymerization nor cyclopropane isomerization occurred. In tests employing catalysts of propylene polymerization which are based on synthetic aluminum silicate, the cyclopropane in mixture with olefins is isomerized 65 - 100%. It was stated that no final conclusions concerning the polymerizing effect of cyclopropane admixtures could be drawn from the experimental data, since the yields of liquid polymerizates were lower than

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Catalytic Isomerization of Cyclopropane
in Mixtures With OlefinsS/062/60/000/008/025/03/XX
B013/B055

ethylene produced only slight formation of liquid polymerizates. The yield was less than 1% of the initial ethylene and 9 - 43% of the added cyclopropane. The latter was isomerized only up to 20% (Table 1). In experiments with propylene (Table 2), the portion of reacted cyclopropane was lower (5 - 15%). The data listed in the table show that liquid polymerizates are formed in small quantities, or not at all, when cyclopropane is added to ethylene or propylene. The cyclopropane is isomerized only slightly, only up to 20%. In the presence of hydrogen, the yields of liquid hydropolymerizates of ethylene, obtained with and without addition of cyclopropane, did not exceed 4.1% of the initial alkene. The addition of cyclopropane did not affect the yield. 33 - 57% of the cyclopropane entered into reaction, i.e., a much higher percentage than in the absence of hydrogen. No liquid polymerizates were formed in experiments employing catalysts containing silica gel, (II) and (III). Neither propylene polymerization nor cyclopropane isomerization occurred. In tests employing catalysts of propylene polymerization which are based on synthetic aluminum silicate, the cyclopropane in mixture with olefins is isomerized 65 - 100%. It was stated that no final conclusions concerning the polymerizing effect of cyclopropane admixtures could be drawn from the experimental data, since the yields of liquid polymerizates were lower than

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Catalytic Isomerization of Cyclopropane
in Mixtures With Olefins

S/062/60/000/008/025/033/XX
B013/B055

the amount of reacted cyclopropane. It was, however, possible to determine the activity of the various catalysts. Catalysts containing aluminum silicate were found to be very active in isomerization of cyclopropane in mixtures with ethylene and propylene. Cobalt on alumina was much less efficient. There are 4 tables and 22 references: 12 Soviet, 10 US, 4 British, 7 German, and 1 French.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR) ✓

SUBMITTED: March 9, 1959

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S/081/60/000/022/016/016
A005/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 22, p. 571, # 91091

5-3830 2209
AUTHORS: Eydis, Ya. T., Yershov, N. I.

TITLE: On the Role of the Plane Chains in the Catalytic Hydropolymerization Mechanism of Olefins Under the Action of Small Quantities of Carbon Monoxide in the Presence of Hydrogen

PERIODICAL: Probl. kinetiki i kataliza, 1960, Vol. 10, pp. 404-409

TEXT: The radical-chain mechanism is proposed of the heterogeneous-catalytic al hydropolymerization reaction of olefins under the action of small CO-quantities in H₂-presence, proceeding in contact with a cobalt catalyst at about 200°C and atmospheric pressure. In the process mechanism are included the reactions of the H-atoms and radicals connected with the surface, their recombinations and dissociations and the interactions with the absorbed olefin molecules. ✓

A. Litmanovich

Translator's note: This is the full translation of the original Russian abstract.

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YERSHOV, N.I.; EYDUS, Ya.T.; YEROKHINA, V.R.

Catalytic hydrocondensation of carbon monoxide with olefins and the
hydropolymerization of olefins under the effect of carbon monoxide
and hydrogen. Report No.32: Conversion of 1-octene. Izv. AN SSSR.
Otd.khim.nauk no.9:1696-1702 S '61. (MIRA 14:9)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Carbon monoxide) (Octene) (Hydrogen)

15.8063

25273
S/062/61/000/010/010/018
B106/B101

AUTHORS: Yershov, N. I., Eydus, Ya. T., and Yerokhina, V. R.

TITLE: Catalytic hydrocondensation of carbon monoxide with olefins and their hydropolymerization under the action of carbon monoxide and hydrogen. Communication 33. Formation of higher hydrocarbons with a number of carbon atoms not being an integral multiple of the initial olefin

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 10, 1961, 1871-1874

TEXT: The catalytic hydropolymerization of olefins under the action of carbon monoxide in the presence of hydrogen and the hydrocondensation of carbon monoxide with olefins yield both real polymers and their hydro-generation products, and a considerable quantity of higher hydrocarbons with a number of carbon atoms not being an integral multiple of the initial olefin. The authors clarified the reasons of formation of these higher hydrocarbons. The yield of these hydrocarbons increases with increasing

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B106/B101

Catalytic hydrocondensation of carbon...

molecular weight of the initial olefin (double bond in 1-position) while the value of the mean multiple K_m decreases for the whole higher-boiling fraction of the condensate. $K_m = (\sum \alpha_i n_i) / n$ (2) (α_i = fraction of the i-th hydrocarbon in the higher-boiling fraction of the condensate; n_i = number of carbon atoms in the i-th hydrocarbon; n = number of carbon atoms in the initial olefin). The formation of larger amounts of higher hydrocarbons, the carbon number of which is not an integral multiple of the initial olefin, can be explained neither by hydrocracking of the initial olefin nor by its hydrocondensation with carbon monoxide. Therefore, it is assumed that the formation of the higher hydrocarbons mentioned is due to the cleavage of carbon-carbon bonds during hydropolymerization or hydrocondensation. Radicals are formed which may lead to the formation of higher hydrocarbons with a carbon number not being an integral multiple of the initial olefin. The authors conclude: In catalytic reactions of olefins under the action of carbon monoxide and hydrogen, the hydrocarbon chains grow less by molecular interaction of the initial olefin than by reaction

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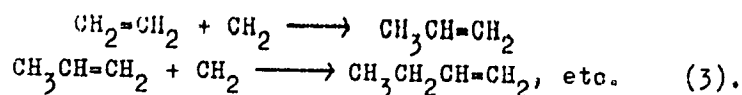
28273

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B106/B101

Catalytic hydrocondensation of carbon...

of the initial olefin with radicals formed by cleavage of carbon-carbon bonds on the catalyst. Therefore, the higher-boiling reaction products mainly yield hydrocarbons the carbon number of which is not an integral multiple of the initial olefin. Hydrocarbons with fewer carbon atoms than are present in the initial olefin are also formed in small quantity. The cleavage of the C-C bonds is facilitated by plane addition of the absorbed olefin molecule to the catalyst surface and the resulting deformation. This plane absorption only occurs at low carbon monoxide concentrations. At higher concentrations, the carbon monoxide may displace, from the catalyst surface, the carbon atoms of the olefin which do not lie at the double bond. This eliminates the deformation of the olefin molecule. Under such conditions, the hydrocarbon chain may grow without cleavage of carbon-carbon bonds by hydrocondensation of the olefin with the carbon monoxide according to the following scheme:



Thus, the type of adsorption of the olefin molecule and, therefore, also

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Catalytic hydrocondensation of carbon...

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the direction of the reaction may change as dependent on the content of carbon monoxide and hydrogen in the initial gas mixture and on the capability of the olefin of being adsorbed. These reciprocal transitions of the reactions of olefins under the action of carbon monoxide and hydrogen will be thoroughly studied in the following communication. There are 8 references: 7 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: A. W. Fletcher, E. J. Gibson, Radioisotope Conf. II, 41 (1954).

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: April 8, 1961

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15.8063

28274
S/062/61/000/010/011/018
B106/B101

AUTHORS: Eydus, Ya. T., Yershov, N. I., and Yerokhina, V. R.

TITLE: Catalytic hydrocondensation of carbon monoxide with olefins and their hydropolymerization under the action of carbon monoxide and hydrogen. Communication 34. Reciprocal transitions of formation reactions of hydrocarbons from mixtures of ethylene, hydrogen, and carbon monoxide

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 10, 1961, 1874 - 1879

TEXT: It had been assumed previously (Ref. 1: N. I. Yershov, Ya. T. Eydus, Dokl. AN SSSR, 115, 1126 (1957); 119, 1062 (1958)) that one stage of the synthesis of higher hydrocarbons from carbon monoxide and hydrogen is a radically proceeding hydrocondensation of carbon monoxide with olefins. In the subsequent stages of synthesis, this reaction may change into a hydropolymerization of olefins, which constitutes a radical chain reaction. In the present study, the authors considered the possibility of a similar transition of these reactions into each other on

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Catalytic hydrocondensation of...

a catalyst that is efficient both in the reaction according to Orlov-Fischer-Tropsch, and in hydropolymerization reactions of olefins and their hydrocondensation with carbon monoxide. Such a catalyst was obtained by activating a Co-clay catalyst with addition of 18% ThO_2 (referred to metallic cobalt). A Co-kieselguhr catalyst is also catalytically active in all reactions mentioned. The tests were conducted at 190°C and atmospheric pressure in a flowing system. The volume velocity of the initial gas mixture was close to 100 hr^{-1} . Before the tests, the catalyst was reduced with hydrogen at 450°C for 5 hr; the catalyst was regenerated in the same manner. Binary mixtures $\text{CO} - \text{H}_2$ (1:2) and ternary mixtures $\text{C}_2\text{H}_4 - \text{H}_2 - \text{CO}$ of different compositions were used as initial mixtures. No liquid hydrocarbons but mainly CH_4 , CO_2 , and H_2O were formed in the tests with binary mixtures $\text{CO} - \text{H}_2$ during the first 5-7 hr of the reaction, immediately after reduction of the catalyst. The same occurred immediately after regeneration of the catalyst. The formation of liquid hydrocarbons only begins after 6-7 hr contact time, their yield grows from

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Catalytic hydrocondensation of...

one regeneration to the other (Fig. 1). Initial mixtures with 7-7.5% CO and with 25-35% CO were used in tests with $C_2H_4 - H_2 - CO$ mixtures. At lower CO concentrations under otherwise equal conditions, the yield of liquid hydrocarbons was 2-3 times the yield at high CO concentrations. In the presence of small CO amounts the ethylene hydropolymerizes, at higher CO concentrations hydrocondensation with carbon monoxide occurs. Thus, it is possible to attain a transition from one reaction into another, and vice versa, by changing the composition of the initial gas in the presence of the catalyst. A reduction of the C_2H_4/H_2 ratio in the initial mixture favors hydrogenation of ethylene to ethane. It was found that the molar ratios at which CO, H_2 , and C_2H_4 react with formation of liquid hydrocarbons are very similar to the molar ratios of these gases in the initial mixture. Fig. 1 shows that hydropolymerization and hydrocondensation in ternary mixtures also proceed in the first 5-7 hr after reduction or regeneration of the catalyst, and even produce maximum yields of liquid hydrocarbons in the period of regeneration. The synthesis of hydrocarbons from CO and H_2 , however, yields only methane

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X

Catalytic hydrocondensation of...

at the same stage. This interesting fact may be explained as follows: In the synthesis of hydrocarbons from CO and H₂, the reduction of carbon monoxide produces radicals which either polymerize (methylene radicals) or condense, e.g., with cleavage of water (hydroxy methylene radicals). During methane formation at the beginning of contact, the interactions of radicals are apparently hindered so that the radicals act on the adjacent particles (hydrogen in binary CO - H₂ mixtures, olefin in ternary olefin - CO - H₂ mixtures). Thus, the same factors that effect methane formation in the synthesis from CO and H₂ favor, in the case of ternary mixtures, the hydropolymerization of olefins under the action of small CO amounts and the hydrocondensation of CO with olefins. In this case, the methylene radicals do not associate but are preserved as reaction centers and reaction initiators with the help of olefins. There are 1 figure, 3 tables, and 10 references: 7 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: E. F. G. Herington, L. A. Woodward, Trans. Faraday Soc. 35, 958 (1939); S. R. Craxford, Trans. Faraday Soc. 35, 947 (1939).

Card 4/5

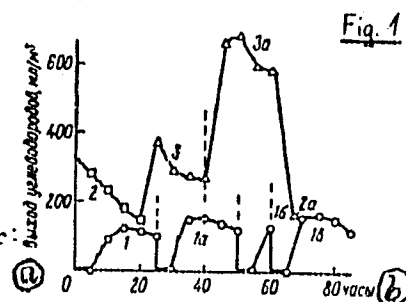
Catalytic hydrocondensation of...

20274 S/062/61/000/010/011/013
B106/B101

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry ineni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: April 8, 1961

Fig.1. Various types of formation reactions of hydrocarbons and their reciprocal transformation. Legend: (a) hydrocarbon yield, ml/m³; (b) hours; (1), (1a), (16'), and (16'') synthesis of hydrocarbons from CO and H₂; (2) and (2a) hydrocondensation of CO with C₂H₄ (initial mixture contained 25% CO); (3) and (3a) hydropolymerization of C₂H₄ under the action of CO (initial mixture contained 7-7.5% CO); the vertical broken lines indicate the instant of catalyst regeneration.



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S/062/62/000/005/008/008
B110/B101

AUTHORS: Yershov, N. I., Eydus, Ya. T., and Yerokhina, V. R.

TITLE: Catalytic hydrocondensation of carbon monoxide with olefins and their hydropolymerization under the action of carbon monoxide and hydrogen. 36. Hydrocondensation and hydropolymerization of olefins on the nickel catalyst

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 5, 1962, 911-916

TEXT: The specific character of the nickel catalyst (as compared with the Co catalyst) was examined, and the hydropolymerization of ethylene, propylene, and butylene under CO action was tentatively performed on it. The catalyst was Ni-Mn-Al₂O₃ kieselguhr (100:20:10:100). However, the synthesis of liquid hydrocarbons from $1\text{CO}+2\text{H}_2$ (200°C) does not set in until after 20 hrs. The yield first attained 128 ml/m³, then 145 ml/m³, while that of CO₂ and CH₄ dropped to ~10 and 20-25%. With 15-18% addition of ethylene to $1\text{CO}+2\text{H}_2$, liquid hydrocarbons formed in the Card 1/4

Catalytic hydrocondensation of carbon ...

S/062/62/000/005/008/008
B110/B101

first hours already under ~75% hydrogenation of ethylene. This is brought about (1) by dilution of the initial CO-H₂ mixture with ethylene which, in reducing the reaction rate, also reduces the catalyst heating, and thus inhibits the methane formation; (2) by preferred ethylene adsorption to the most active catalyst centers, at which the methane formation takes place.. Since the hydrocarbon formation from carbon monoxide and hydrogen in the presence of ethylene takes place at the less active catalyst centers, liquid hydrocarbons are immediately formed. Ethylene is most readily hydrogenated on the catalyst: at 100°C, the process was almost as rapid as at 200°C, the yields of gaseous paraffin hydrocarbons being 25-27% at 100°C and 29.4% at 200°C. At 190-200°C on the Ni catalyst, ethylene chiefly reacts with hydrogen, as the latter cannot react with the products of incomplete CO reduction. If, however, this is made possible, ethylene can take part in the synthesis of higher hydrocarbons. Thus, when a binary mixture of 1CO+2H₂ and ethylene was alternately blown through for 3 and 6 min, respectively, the yield of liquid hydrocarbons was 240-260 ml/m³. 60-68% of reacting ethylene is

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Catalytic hydrocondensation of carbon ... S/062/62/000/005/008/008
B110/B101

hydrogenated to ethane. When alternately blowing through with propylene (6 min) and $\text{CO} + 2\text{H}_2$ (3 min), the hydrocarbon yield was raised to 154-172 ml/m^3 , i. e., it rose by 60-79 ml/m^3 as compared with the binary mixture. The propylene hydrogenation was relatively poor in this connection (17.5% of initial propylene). When alternately blowing through with butylene (6 min) and $\text{CO} + 2\text{H}_2$ (3 min), the olefin yield rose to 210 ml/m^3 , and the yield of gaseous paraffins dropped to 9-10% of initial butylene. When blowing through with ternary mixtures of Co, H_2 , and olefin (ethylene, propylene, butylene) at 190°C and an atmospheric pressure with $\sim 100 \text{ hr}^{-1}$ volume rate on the Ni catalyst, the olefin is hydrogenated to the corresponding paraffin. The formation of higher hydrocarbons from CO and H_2 in the presence of ethylene and its homologs takes place at $190-200^\circ\text{C}$ on the catalyst surface which is free from olefin molecules. This surface is the smaller the higher the olefin concentration in the initial gaseous mixture. This causes the yield of liquid hydrocarbons to decrease on olefin addition. If, however, the olefin reacts with reduction products (methylene and other radicals),
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Catalytic hydrocondensation of carbon ... S/062/62/000/005/C08/C08
B110/B101

hydropolymerization and hydrocondensation prevail over olefin hydrogenation.
There are 4 tables.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR (Institute of Organic Chemistry imeni
N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: December 16, 1961..

Card 4/4

EYDUS, Ya.T.; YERSHOV, N.I.; YEROKHINA, V.R.; ANDREYEV, N.S.

Oxygen-initiated heterogeneous catalytic reaction of condensation of olefins in the presence of hydrogen. Part 2: Conversions of ethylene. Kin. i kat. 4 no.3:416-421 My-Je '63.
(MIRA 16:7)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.
(Ethylene) (Polymerization)
(Oxygen)

YERSHOV, N.I.; EYDUS, Ya.T.; YEROKHINA, V.R.; ANDREYEV, N.S.

Oxygen-initiated heterogeneous catalytic reaction of condensation of olefins in the presence of hydrogen. Part 3: Conversions of propylene. Kin. i kat. 4 no.6:829-834 N-D '63.
(MIRA 17:1)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.

YERSHOV, N.I.; EYDUS, Ya.T.; YEROKHINA, V.R.; ANDREYEV, N.S.

Oxygen-initiated heterogeneous catalytic reaction of condensation
of olefins in the presence of hydrogen. Part 5: Conversion of isobutylene.
Kin. 1 kat. 6 no.2:300-305 Mr-Ap '65. (MIRA 18:7)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.

EYDUS, Ya.T.; YERSHOV, N.I.

Initiated heterogeneous-catalytic reactions. Dokl. AN SSSR 162 no.3:
610-612 My '65. (MIRA 18:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
Submitted November 11, 1964.

L 10027-86 EEP(m)/EEP(1)/T FI
ACC-NR AP6011657

SOURCE CODE: UR/0020/66/167/003/0583/0585

AUTHOR: Yershov, N. I.; Eydus, Ya. T.; Guseva, I. V.

ORG: Institute of Organic Chemistry im. N. D. Zelinskiy, Academy of Sciences, SSSR
(Institut organicheskoy khimii Akademii nauk SSSR)

TITLE: The initiating effect of carbon monoxide during hydropolymerization¹ of ethylene¹ in the presence of hydrogen

SOURCE: AN SSSR. Doklady, v. 167, no. 3, 1966, 583-585

TOPIC TAGS: polymerization initiator, carbon monoxide, ethylene, reaction mechanism

ABSTRACT: The report describes conditions for the hydropolymerization of ethylene at 190C, during which the hydrogen reduction of carbon monoxide is almost completely absent and the monoxide is not detectable in the end products of the process. Preliminary exposure of the reduced Co catalyst to the monoxide, or to a gas containing it, at 100C represents one method of obtaining such conditions. The ratio of ethylene to hydrogen is especially significant in the process and can serve to control the catalyst's ability to reduce CO. In such cases the monoxide functions as the initiating agent through any of the four described reaction variants.

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UDC: 66.097.13

10128-66

ACC NR: AP6011657

The results indicate that the growth of carbon chains during hydropolymerization (possibly also in the Fischer-Tropsch process with a Co catalyst) is not a dehydration-condensation process, but represents a polymerization mechanism with corrections for destruction processes. The paper was presented by Academician B. A. Kazanskiy 2 Aug 65.

SUB CODE: 07/ SUBM DATE: 02Jul65/ ORIG REF: 009/ OTH REF: 012

"APPROVED FOR RELEASE: 03/15/2001

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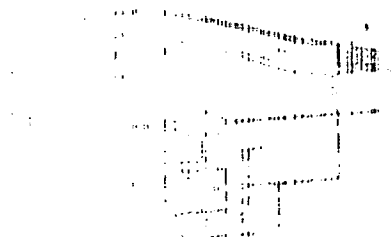
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YERSHOV, N.M.

Studying ventilation systems by means of reconnaissance surveys.
Nauch. trudy KNIUI no.16:146-163 '64. (MIRA 18:7)

YERSHOV, N.M.

Graphonalytical method of studying the joint operation of fans. Nauch.
trudy KNIUI no.16:239-245 '64. (MIRA 18:7)

YERSHOV, N.M.

Use the checking and testing of instruments for training employees.
Izm.tekh. no.10:57 O '61. (MIRA 14:11)
(Measuring instruments--Maintenance and repair)

YERSHOV, N.M.

Regulating the distribution of air in a ventilation system.
Nauch. trudy KNIUI no.15:262-271 (MIRA 18:8)

YERSHOV, N.N.; SEMENOV, Yu.V.; CHERNYI, A.I.; VOSKOBOYNIK, D.I., redaktor.

[Russian-English dictionary of nuclear physics and engineering] Russko-
angliiskii slovar' po iadernoi fizike i tekhnike. Pod red. D.I. Vosko-
boinika. Moskva, Akademiia nauk SSSR, Institut nauchnoi informatsii,
1955. 349 p. (MLRA 8:10)

(Nuclear physics--Dictionaries)
(Nuclear engineering--Dictionaries)

YERSHOV, N. N.

Cand Tech Sci - (diss) "New method of accelerating the process of refrigeration at great depths." Leningrad, 1961. 33 pp with diagrams; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Lenin and Labor Red Banner Mining Institute G. V. Plekhanov); 200 copies; price not given; (KL, 7-61 sup, 236)

YERSHOV, N.N.

Results of exploring caverns in the vicinity of Kulyab. Dokl. AN Tadzh.
SSR. no.1:48-50 '51. (MIRA 9:10)

1. Insitut istorii, arkhologii i etnografii Akademii nauk Tadzhikskoy
SSR. Predstavleno deystvitel'nyy chlenom Akademii nauk Tadzhikskoy SSR
A.A. Semenovym. (Kulyab Province--Caves)

FRITSSHE, K.G. [Fritzsche, Carl Hellmut, 1895-]; POTS, Ye.L. [Potts,
Edward Logan Johnston]; YERSHOV, N.N. [translator];
VOROB'YEV, B.M., red.

[Horizontal mining] Etazhnaia razrabotka ugol'nykh mestorozhdenii.
Moskva, Ugletekhizdat, 1956. 394 p. (MIRA 15:12)
(Coal mines and mining)

YERSHOV, N. N.

YENIKLEYEV, N.B.; YERSHOV, N.N.

Scientific and technical conference on special mining methods. Gor.
shur no.2:79- P '57. (MIRA 10:4)
(Mining engineering)

YERSHOV, N.N.

Rock cezentation during mining operations in foreign countries
(from "Annales de l'Institut du Batiment et des Travaux Publiques"
no. 85, 1955). Shakht.stroi. no.3:30-31 Mr '57. (MIRA 10:7)
(Subsidences (Earth movements))

YERSHOV, N.H., gornyy inzhener.

Scientific and technical conference on special mining methods.
(MLBA 10:2)
Ugol' 32 no.1:45-46 Ja '57.
(Mining engineering)

BARON, L.I., prof., doktor tekhn.nauk; YERSHOV, N.M., gornyy inzh.;
LEPESHINSKAYA, Ye.V., red.; KRYUCHKOVA, V.H., tekhn.red.

[English-Russian mining dictionary] Anglo-russkii gornyi
slovar'. Pod red. L.I. Barona. Moskva, Gos.izd-vo fiziko-
matem.lit-ry, 1958. 992 p. (MIRA 12:4)
(English language--Dictionaries--Russian)
(Mining engineering--Dictionaries)

YERSHOV, N. N.

AUTHORS: Yershov, N. N., Trumbachev, V. F., Candidate of Technical Sciences 30-2-45/49

TITLE: Important Tasks of Mining Industry (Vazhneyshiye zadachi gornogo dela)
Scientific Technical Conferences (Nauchno-tekhnicheskiye soveshchaniya)

PERIODICAL: Vestnik AN SSSR, 1958, . Nr 2, pp. 115-118 (USSR)

ABSTRACT: The Institute for Mining of the AN USSR together with the Central Administration of the Scientific Technical Mining Society called a conference from November 20-23, 1957 in order to discuss problems of the building up and the exploitation of mining industries on sites with complicated hydrological and geological conditions (site of the magnetic anomaly Kursk). The conference was attended by representatives of scientific, industrial, and other organisations of the country, e.g. of a number of councils of political economy. The main aspects of these problems were discussed in plenary meetings held in three sections and the main tasks for the future were fixed. The conference took place under the chairmanship of L.D. Shevyakov. The following reports were given:

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Important Tasks of Mining Industry.
Scientific Technical Conferences

- 1) G.I. Man'kovskiy dedicated his report to the scientific investigations of mining on watered sites.
- 2) L.V. Popov reported on tasks of geological engineering for the opening of new sites.
- 3) A.G. Bobryshev reported on the hydrology of the Yakovlevo site and the magnetic anomaly Kursk.
- 4) M.I. Agoshko reported on the opening- and exploitation schemes of the Institute for Mining.
- 5) L.D. Shevyakov remarked that rational mining machines can be constructed only according to data of mining and geological engineers.
- 6) V.S. Luk'yanov reported on the method of hydraulic analogies in scientific investigations and technical computations.
- 7) O.A. Dolgov reported on the scientific methodology of exploitation by means of freezing.
- 8) D.S. Murav'yev reported on the washing of drilling sites which may open considerable reserves.
- 9) L.M. Sokovich within the section conducted by N.V. Mel'nikov reported on the application of computation methods of slope stability.

Card 2/4

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Important Tasks of Mining Industry.
Scientific Technical Conferences

10) N. Ya. Denisov reported on problems of the strength of various kinds of clay.

11) I. Ye. Zhernov reported on drainage works.

12) M. N. Kudryakov reported on the results of his official tour to Holland for the investigation of the experiences collected with drilling work there.

It was found that many problems are still theoretically insufficiently elaborated and that the existing methodologies and research programs do not correspond any more to up to date requirements. The slow introduction of new technical equipment was equally criticized. The resolution was made to extend scientific work in the field of rock pressure, as well as the computation methods of stemples. Above all, the Institute for Mining of the AN USSR was charged with this task. From December 2-4, 1957 the Institute for Mining of the AN USSR organized a discussion of the problems of pressure in rock of horizontal and vertical structure. It was attended by representatives of academic and scientific branch research institutes, of universities, and industrial organisations. The following reports were given:

1) A. S. Kosmodominianskiy reported on the role of the anisotropy in the determination of stresses in massives.

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30-2-45/49

Important Tasks of Mining Industry.
Scientific Technical Conferences

- 2) K.V. Ruppeneyt and Yu.M.Liberman reported on the investigation results concerning the influence of erosion on rock transport.
- 3) T. A. Kryzhanovskaya reported on the problem of rock pressure on stemples.
- 4) M.I.Rozovskiyy and Zh.S.Yerzhanov reported on the methodology of laboratory determination of the creeping of rock.
- 5) B.M.Vinogradov reported on the measuring of rock pressure in railway and subway tunnels.
- 6) A.G.Barlas reported on the application on analytical methods for the investigation of stemples.
- 7) M.A.Komissarov, E.P.Lunov, A. M. Yanchur, A. I. Zuykov and others reported on the investigation of the phenomena of rock pressure in the coal pits of the Donetsk coal field and others.
- 8) P. Kvapil, Czech scientist, reported on his research work on mine damp. Shortcomings in the field of the investigation of physical mechanical properties of rock were found at this conference as well as weak contacts between practice and theory which should be improved by the extension of future research work and its coordination.

AVAILABLE:

Card 4/4

Library of Congress

1. Mining industry-USSR
USSR

2. Hydrology-USSR

3. Mining engineering-

~~YERKOV, H. H.~~ inzh.

Modern shaft sinking techniques in the Union of South Africa.
Shakht. stroi. no.9:28-30 '58. (MIRA 11:10)

1. Institut gornogo dela AN SSSR.
(South Africa, Union of—Shaft sinking)

~~YERSHOV, N.~~

Machine for inclined drifting. Mast. ugl. 7 no.9:18 S '58.
(Coal mining machinery) (MIRA 11:10)

YERSHOV, N.A. [translator]

Shaft sinking in gold mines of the Free State Saaiplaas Gold
Mining Company. Shakht.stroi. no.12:22-27 ' 58. (MIRA 11:12)

1. Institut gornogo dela AN SSSR.
(South Africa, Union of—Shaft sinking)

SHEVYAKOV, L.D., akademik, red.; YERSHOV, N.N., red.; MAN'KOVSKIY, G.I.,
 doktor tekhn.nauk, red.; MEL'NIKOV, N.V., red.; NIKONOV, G.P.,
 red.; TRUPAK, N.G., red.; UNKOVSKAYA, N.P., red.; USKOV, A.A.,
 red.; YERSHOV, N.N., otv.red.; CHEKHOVSKAYA, T.P., red.izd-va;
 KOROZENKOVA, Z.A., tekhn.red.

[Transactions of the scientific-technological conference on
 problems of building mining enterprises in mineral deposit areas
 with difficult hydrogeology and engineering geology conditions] Trudy
 Nauchno-tekhnicheskogo soveshchaniya po voprosam stroitel'stva i
 ekspluatatsii gornyykh predpriyatii na mestorozhdeniyakh poleznykh
 iskopaemykh so slozhnymi gidrogeologicheskimi i inzhenerno-geo-
 logicheskimi usloviyami. Moskva, Ugletekhizdat, 1959. 510 p.
 (MIRA 12:12)

1. Nauchno-tekhnicheskoye soveshchaniye po voprosam stroitel'stva i
 ekspluatatsii gornyykh predpriyatii na mestorozhdeniyakh poleznykh
 iskopaemykh so slozhnymi gidrogeologicheskimi i inzhenerno-geologi-
 cheskimi usloviyami. Moscow, 1957. 2. Institut gornogo dela AN SSSR
 (for Man'kovskiy, Unkovskaya). 3. Predsedatel' pravleniya Nauchno-
 tekhnicheskogo gornogo obshchestva (for Uskov).
 (Mining engineering) (Mining geology)

YERSHOV, N.H., inzh.

Shaft No.2 sinking at "Harmony Gold Mining Company"; Union of South
Africa. Shakh. stroi. no.1:28-32 Ja '59. (MIRA 12:1)

1.Institut gornogo dela AN SSSR.
(South Africa, Union of--Shaft sinking)

YERSHOV, N.

International symposium on shaft sinking and tunneling. Shakht.
stroil. no.6:31 Je '59. (MIRA 12:9)
(Mining engineering)

YERSHOV, N.N., inzh.

Rock reinforcement during mining operations. Shakht.stroi.
no.8:29-31 Ag '59. (MIRA 12:11)

1. Institut gornogo dela AN SSSR.
(Mining engineering) (Binding materials)

YERSHOV, N.N., inzh.

New type of formwork for concreting mine shafts (from "The
Mining Journal," no.6453, April 1959). Shakht.stroi. no.9:
29-30 S '59. (MIRA 12:12)
(Netherlands---Shaft sinking)

YERSHOV, N.

Forework for concreting horizontal galleries (from "The
Mining Journal, Annual Review for 1958). Shakht.stroi. no.9:
30 S '59. (MIRA 12:12)
(South Africa, Union of--Mining engineering)

YERSHOV, N.N., inzh.

Shaft sinking by the freezing method to a depth of more than
9000 m. (form-"Mining Congress Journal," no.12, 1958). Shakht.
stroil. no.11:32-3 of cover N 159. (MIRA 13:3)
(Canada--Shaft sinking)

YERSHOV, N.H., inzh.; PODOLYAKO, L.G.

Mechanized rectangular cross-section shaft sinking in the
United States (from "Engineering and Mining Journal," no.12,
1958, "Mining World," no.13, 1958, "Mines Magazine," no.4, 1958).
Shakht.stroi. no.1:27-29 Ja '60. (MIRA 13:5)

1. Institut gornogo dela AN SSSR.
(United States--Shaft sinking)

MAN'KOVSKIY, G.I.; LUK'YANOV, V.S.; DOLGOV, O.A.; YERSHOV, N.N.; MATANOVA,
E.M.; SBOYEVA-FILINA, K.V.; VOLKOVA, V.A., red. izd-va; SUKHININA,
N.D., tekhn. red.

[Methods of calculating the basic parameters of rock freezing
processes in shaft sinking with the help of a hydraulic inte-
grator] Metodika rascheta s pomoshch'yu gidrointegratora osnov-
nykh parametrov protsessa zamorazhivaniya gornykh porod pri
prokhodke shakhtnykh stvolov. Moskva, Gos. nauchno-tekhn. izd-
vo lit-ry po gornomu delu, 1960. 53 p.

(MIRA 14:5)

(Integrators)

(Soil freezing)

BARON, L.I., prof., doktor tekhn.nauk; YERSHOV, N.N., gornyy inzh.

Outline of foreign language-Russian mining dictionaries. Nauch.
soob.Inst.gor.dela 6:129-137 '60. (MIRA 15:1)
(Mining engineering--Dictionaries)
(Russian language--Dictionaries)

YERSHOV, N.N., inzh.; PODOLYAKO, L.G., inzh.; SHVETS, V.V., inzh.

Boring operations in shaft sinking. Mekh.i avtom.proizv. 16
no.7:20-22 J1 '62. (MIRA 15:8)
(Shaft sinking) (Boring)

YERSHOV, N.N., kand.tekhn.nauk; PROZOROV, L.B., kand.tekhn.nauk

Increasing the effectiveness of rock freezing. Nauch. soob.
IGD 17:8-16 '62. (MIRA 16:7)

(Soil freezing)

YERSHOV, M.N.; PODOLYAKO, L.G.

Workerless sinking of shafts. Vest. AN SSSR 32 no. 3:37-39
Mr '62. (HTRA 15:2)

(Shaft sinking)

YERSHOV, N.N., kand.tekhn.nauk

Cutting a tunnel with a hydraulic rig (from "Contractors and Engineers," no.3, 1962). Prom. stroi. 40 no.9:64-3 of cover '62. (MIRA 15:11)

1. Institut gornogo dela imeni A.A. Skochinakogo.
(United States—Tunneling)

MAN'KOVSKIY, G.I.; DOLGOV, O.A., inzh.; YERSHOV, N.N., kand. tekhn.
nauk; POLYAKOVA, Z.V., red.; GERASIMOV, V.F., tekhnolog

[Nomograms for calculating the freezing of rocks] Nomo-
grammy dlia raschetov zamorashivaniia gornnykh porod. Mo-
skva, Institut gornogo dela, 1963. 50 p. (MIRA 16:10)

1. Chlen-korrespondent AN SSSR (for Man'kovskiy).
(Soil freezing)

SHEVYAKOV, L.D., akademik, otv. red.[deceased]; MAN'KOVSKIY, G.I., red.; AFENDIKOV, N.N., kand. tekhn. nauk, red.; YERSHOV, N.N., kand. tekhn. nauk, red.; LIBERMAN, Yu.M., red.; PANOV, A.D., red.[deceased]; RUSHCHINSKIY, M.V., red.; KRASOVSKIY, I.P., red.izd-va; PROZOROVSKAYA, V.L., tekhn. red.; LOMILINA, L.N., tekhn. red.

[Rock pressure and the lining of vertical shafts] Gornoe davlenie i krep' vertikal'nykh stvolov. Pod red. L.D. Sheviakova. Moskva, Gosgortekhzdat, 1963. 211 p.
(MIRA 16:11)

1. Moscow. Institut gornogo dela imeni A.A.Skochinskogo.
(Rock pressure) (Shaft sinking)

BARON, Lazar' Izrailevich, doktor tekhn. nauk, prof.; YERSHOV,
Nikolay Nikolayevich, kand. tekhn. nauk; BASHKIROV, I.A.,
spets. red.; ROZHKO, K.M., red.-leksikograf; PLAKSHE,
L.Yu., tekhn. red.

[French-Russian mining dictionary] Frantsuzsko-russkii
gornyi slovar'. Pod red. L.I. Barona. Moskva, Fizmatgiz,
1963. 829 p. (MIRA 16:7)

(French language--Dictionaries--Russian)
(Mining engineering--Dictionaries)

YERSHOV, N.N., kand.tekhn.nauk

Transporting ore on an automatic conveyor line (from "Mechanical Hauling,"
no.3, 1962). Gor. zhur no.4:74-75 Ap '63. (MIRA 16:4)

1. Institut gornogo dela, im. Skochinskogo, Moskva
(Chile—Conveying machinery)

MAN'KOVSKIY, G.I., nauchn. sotr.; GALANOV, P.I., inzh.; YERSHOV, N.N.,
 nauchn. sotr.; MURAV'YEV, D.S., nauchn. sotr.; NOSOVSKIY,
 A.A., inzh.-konstruktor; PODOLYAKO, L.G., nauchn. sotr.;
 TIMOSHPOL'SKIY, Ye.Ya., inzh.-konstruktor; FEYGIN, L.M.,
 inzh.-konstruktor; SHVETS, V.V., inzh.

[Boring mine shafts with machines made by the Ural Factory
 for Heavy Machinery Manufacture] Burenie stvolov shakht usta-
 novkami UZTM. Moskva, Izd-vo "Nedra," 1964. 131 p.
 (MIRA 17:8)

1. Chlen-korrespondent AN SSSR (for Man'kovskiy). 2. Institut
 gornogo stroitel'stva imeni A.A.Skochinskogo (for Man'kovskiy, Yershov,
 Murav'yev, Shvets). 3. Ural'skiy zavod tyazhelogo mashino-
 stroeniya imeni Sergo Ordzhonikidze (for Nosovskiy, Timoshpol'skiy,
 Feygin, Galanov).

LEBEDYANSKAYA, Z.P., kand. tekhn. nauk; YERSHOV, N.N., kand. tekhn. nauk;
GOL'BERG, V.N., inzh.

Use the regional principle of drainage in mine building. Shakht.
stroi. 9 no.10:6-8 0 '65. (MIRA 18:9)

SALOMAA, Erkki; YERSHOV, M.P. [translator]; KUTOZOV, V.I., red.;
GOLICHENKOVA, A.A., tekhn.red.

[Concise study on the history of the trade-union movement in
Finland] Kratkii ocherk istorii professional'nogo dvizheniia
v Finlandii. Moskva, Izd-vo VTsSPS Profizdat, 1960. 102 p.
Translated from the Finnish. (MIRA 14:3)
(Finland--Trade unions)

YERSHOV, N.R.

ZAREMBO, K.S., redaktor; YERSHOV, N.R., vedushchiy redaktor; TRCFIMOV, A.V.,
tekhnicheskiiy redaktor

[Manual on the transportation of gases] Spravochnik po transportu
gazov. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi
lit-ry. 1954. 614 p. [Microfilm] (MLRA 7:9)
(Gases—Transportation)

YERSHOV, N.S.

Mechanism of the cavitation in centrifugal pumps. Izv.vys.
ucheb.zav.; av.tekh. 2 no.3:57-63 '59. (MIRA 12:12)

1. Monkovskiy aviatsionnyy institut. Kafedra AD-2.
(Cavitation) (Centrifugal pumps)

L 39793-66 EWT(1)/BWP(m)/BTT(m)/EPF(n)-2/EMA(d)/T/ETC(m)-6/ED(1) 23
 SOURCE CODE: UR/0147/66/000/001/0165/0171

ACC NR: AP6011799

AUTHOR: Yershov, N. S.

ORG: none

TITLE: Maintaining similarity between flows when calibrating gages used for studying working processes in pumps 23

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 1, 1966, 165-171

TOPIC TAGS: flow, fluid flow, Reynolds number, ideal fluid, cavitation

ABSTRACT: The author analyzes the conditions necessary for maintaining dimensional homogeneity with respect to Reynolds number during calibration of special gages used for studying flow processes in pumps. The gage is a spherical or cylindrical body with flow channels which is located in the stream of fluid being studied. When an ideal fluid flows around the body, the pressure differential between two points on its surface is proportional to the dynamic head. This is the principle used for determining flow velocity by measuring the pressure distribution formed on the surface of the gage as the stream flows around the instrument. The procedure used for calibrating the gages is briefly discussed. The gages were calibrated both in air and in water without cavitation. It is experimentally shown that gages with lateral apertures situated at angles of 30-35° to the central axis may be calibrated for velocity mea-

UDC: 532. 57

Card 1/2

L 39793-66

ACC NR: AP6011799

measurements at $Re > 5.8 \cdot 10^3$ without regard to maintaining dimensional homogeneity between Reynolds numbers. The effect of cavitation number on gage parameters was also studied. The experimental results indicate that calibration without regard to Reynolds number similarity is possible in cylindrical and spherical gages if the lateral openings are located at $60-70^\circ$ to the central axis. Cavitation may take place on the surface of the gage when measuring high flow velocities in water. In this case, equality between cavitation numbers is necessary during gaging. Orig. art. has: 6 figures, 1 table.

SUB CODE: 20/

SUBM DATE: 09Sep64/

ORIG REF: 001/

OTH REF: 001

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212 MLP

L 38489-66 EWP(m)/EWT(1)/EWT(m)/EWP(j) WN/JW/DJ/RM

ACC NR: AP6017838

SOURCE CODE: UR/0147/66/000/002/0130/0136

AUTHOR: Yershov, N. S.; Borovskiy, B. I.; Yakimov, V. V.

ORG: none

TITLE: Experimental investigation of the effect of the thermodynamic properties of a liquid on cavitation phenomena

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 2, 1966, 130-136

TOPIC TAGS: fluid property, thermodynamic property, cavitation

ABSTRACT: It has been proposed in previously published work that the effect of the properties of a liquid on cavitation phenomena can be evaluated in terms of the number "B", which is the ratio of the volume of vapor formed during cavitation to the volume of the liquid flow. The expression for B has the form

$$B = \frac{\gamma_{\kappa}}{\gamma_n} \cdot \frac{c_{\kappa}}{r} \cdot \frac{dl}{dt} \cdot \Delta p,$$

where dp/dt is the gradient of the change in the vapor pressure of the liquid with a change in temperature; γ is the specific weight; c is the heat capacity; r is the latent heat of vapor formation; κ = liquid; n = vapor. The experiments described in the article were carried out

UDC: 532.528

Card 1/2

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ACC NR: AP6017838

in a Venturi cavitation tube. The temperature of the water was varied from 290 to 359°K, and the temperature of the alcohol from 293 to 332°K. The calculations show that, with these changes in temperature the B number changes 30 times for water and approximately 4 times for alcohol. The article includes a sketch of the cavitation tube. Orig. art. has: 9 figures. //

SUB CODE: 20/ SUBM DATE: 23Nov64/ ORIG REF: 003

Card 2/2 pb

YERSHOV, N.V., uchitel'

Home-made collapsible models for biology. Biol.v shkole no.1:
89-90 Ja-F '60. (MIRA 13:5)

1. Srednyaya shkola No.46 goroda Ivanovo.
(Biological apparatus and supplies)

22

Synthesis of aminocymene and its use as an antiknock agent in motor fuels. N. V. Krasov and E. N. Fedotova. *J. Applied Chem. (U. S. S. R.)* 10, 800-72 (in English 1937) (1937). - p-MeC₆H₄(CHMe)₂NH₂ was prepd. by nitrating p-MeC₆H₄(CHMe)₂ and reducing the nitro compd. to the amine. The o-nitro compd. was formed. A mixt. of p-MeC₆H₄(CHMe)₂ 70 g. and glacial AcOH 11 cr. was treated with 70 g. H₂SO₄ (d. 1.84), added in drops. The reaction mixt. was kept in an ice-NaCl bath and was thoroughly agitated. A nitration mixt. of HNO₃ 30.4 g. (d. 1.38) and H₂SO₄ 116 g. (d. 1.84) was added, keeping this temp. below 0°. After all the nitration mixt. was added the reaction mixt. was agitated for 2 more hrs., poured into a water-ice mixt., and the nitro compd. was then extd. with PhH. After the usual drying and purification, PhH was distd. off and the nitro compd. was fractionated. The fraction b.p. 148-162° was collected and reduced by means of Sn and HCl (d. 1.19). Aminocymene increased the octane no. of gasoline to the same extent as aniline. Eight references. A. A. Podgorny

21

00

Mutual solubility of shale gasoline and ethyl alcohol at low temperature in the presence of stabilizers. N. Y. Ershov and E. A. Meerson. *J. Appl. Chem.* (U.S.S.R. *Chem. Abstr.* 54:1188). The soly. of shale gasoline (octane no. 70, dn 0.7425, actual tar 3 and po. tenting tar 13 mg./100 cc., S 0.1%, f. p. below -80° , colorless) was investigated in 95% EtOH in the presence and absence of the iso-PrOH, *tert*-BuOH, BuOH and *Calc*OH stabilizers. The shale gasoline had a lower critical soln. temp. in EtOH (in the absence of stabilizers) than Russian petroleum gasoline. Thus, 20-25% of gasoline in 95% EtOH had the critical soln. temp. -10° to -15° and in 98% EtOH, -60° . However, the soly. of shale gasoline in EtOH contg. over 1% of water was limited. Addn. of 2-5% of stabilizers to the soln. of gasoline in 98% EtOH, protected the mixt. from harmful action of water or gasoline admixt. The lowering of the soln. temp. is attributed to the high content of un-card. hydrocarbons. A. A. Podgorny

22

Ca

Influence of oxidation admixtures on the octane number of shale gasoline. N. V. Ershov. *J. Applied Chem.* (U. S. S. R.) 12, 871-5 (1939) (1939).—The effects of H_2O_2 , aniline and tetraethyl lead and their mixts., on the octane no. of shale gasoline (cf. C. A. 34, 6119) were investigated and data are plotted. Each 10% addn. of H_2O_2 increased the octane no. approx. by 3 points, each 1% of aniline increased it by 1-3 points and 2 cc. per 1 kg. of gasoline increased the octane no. by 6 points and 3 cc. by 9 points. The greatest effect in increasing the octane no. was obtained by adding alc.-tetraethyl lead or alc.-aniline mixt. An addn. of the tetraethyl lead-aniline mixt. caused pptn. and decreased the octane no.

A. A. Podgorny

ASTM 36 A METALLURGICAL LITERATURE CLASSIFICATION

ca

Phenols of primary tars and their stabilizing action on shale gasoline in comparison with synthetic inhibitors.

N. V. Ershov, *J. Applied Chem. (U. S. S. R.)* 12, 575-7 (1939), 877 (1939).—The comparative effects of the synthetic (*m*-naphthol, monobenzyl-*p*-aminophenol, *p*-tolyl-*p*-aminophenol, phenyl-*p*-aminophenol) and tar inhibitors (shale, peat and wood tar phenols) was investigated. The shale phenols (in concn. of 0.01%) were the best inhibitors for the shale gasoline. Satisfactory results were obtained in storage as well as in motor tests.

A. A. Podgorny

ASS-51A METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED MAP ONE ONE

REVISION:

SEARCHED MAP ONE ONE

REVISION:

22

Ca

Chemical composition and detonation properties of shale gasoline. N. V. Ershov. *J. Applied Chem. (U. S. S. R.)* 12, 807-9 (in French, 870) (1939).—The gasoline (octane no. = 70) obtained from the Odovsk kukernite belongs to the olefin-paraffin gasoline and has the following compn.: unsatd. 62.0, aromatic 11.4, naphthenes 8.0 and paraffins 18.6%. The gasoline was fractionated into 10 fractions (5° interval) from 40 to 130° and an octane no. and up. gr. of each fraction was detd. An octane no. of gasoline freed from unsatd. and aromatic substances was also detd. Conclusion: The carrier of antidetonation properties of the shale gasoline is the low boiling fraction (according to the phys. compn.) and unsatd. hydrocarbons (according to chem. compn.). A. A. Polgony

ASTM 15.4 METALLURGICAL LITERATURE CLASSIFICATION

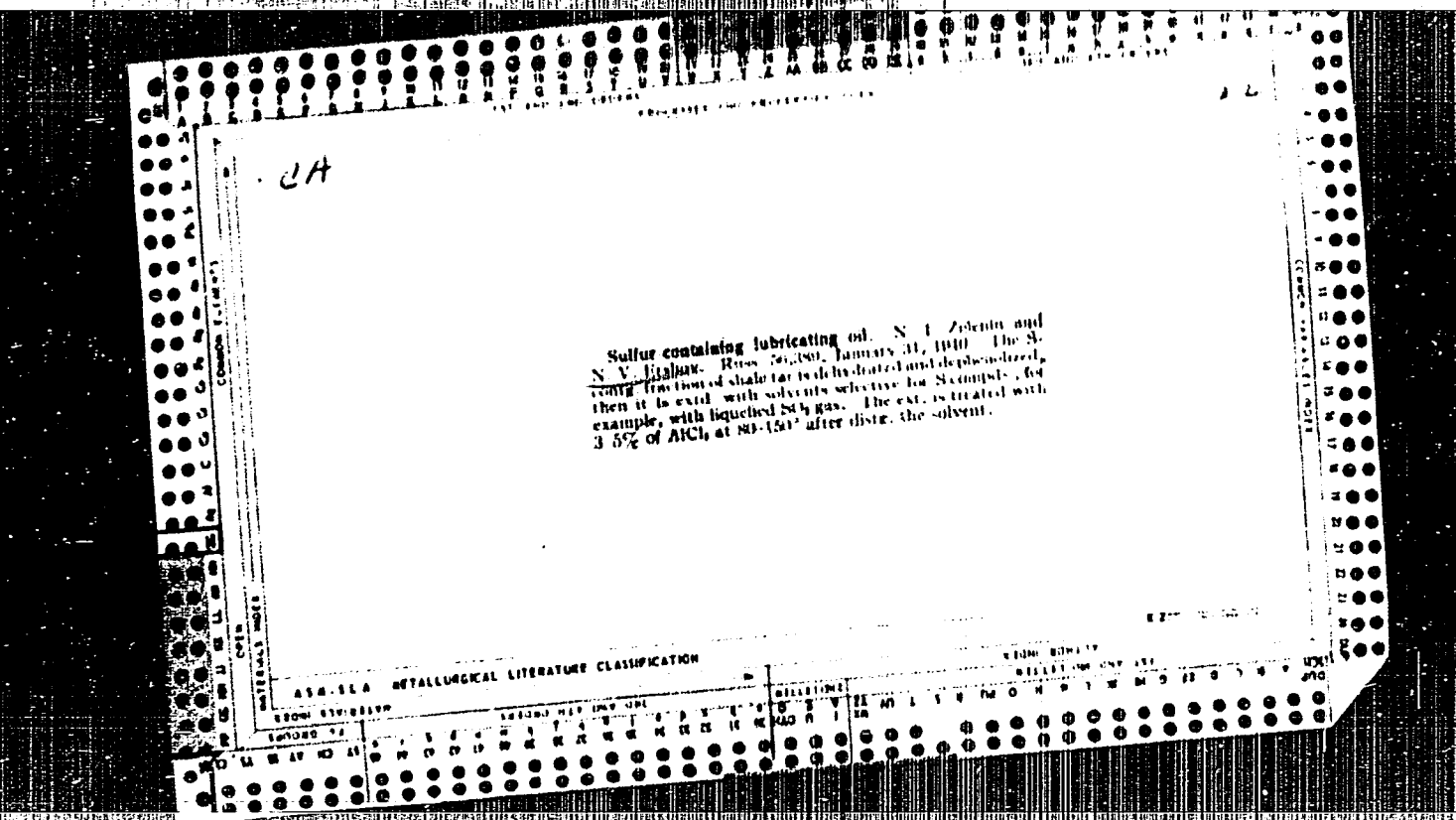
CA

USEFUL SOURCE OF INFORMATION

Kenderlyka shale as a raw material for the preparation of motor fuel. V. A. Lenin and S. V. Hershov (U.S.S.R.) *Applied Chem. (U. S. S. R.)* 12, 1478-9 (in French, 1949) (1950).—Kenderlyka shale gives in a Fischer reactor a tar yield of 10% and 0.85% of gasoline in the evolved gas. Since it is low in S, refining is easy. The tar contains up to 20% gasoline. Satisfactory gasoline and kerosene are obtained after treatment with 2% of H_2SO_4 . Both gasoline and kerosene are stabilized by 0.01% of phenol from Gdov shale refinery tar. The ash cannot be used as a binder in the manufacture of cement. A. A. Bochtlingk.

Oil shales. A. Thau. *Oil u. Kohle vor Petroleum* 35, 716-20 (1939).—Shale-oil production and its possibilities in various countries are briefly reviewed. The possibilities of obtaining oil from various German shales is hampered by ineffective extr. processes. A chart is given showing the economy of extr. German shales in relation to the tar yield obtained therefrom. 31 references. E. J. Mahler

ASH-SEA METALLURGICAL LITERATURE CLASSIFICATION



B-1-3

PROCESSED AND RECORDED UNIT

RESEARCH REPORT OF BUREAU OF CHEMISTRY, U.S. DEPARTMENT OF COMMERCE, U.S. GOVERNMENT PRINTING OFFICE, 1944. Part 2/4. 11-10. This type of bacteria (all of which were tested in development of a test for the detection of bacteria) were tested in development of a test for the detection of bacteria. When 0.01 g. of solid was placed within 10 min. through 1 l. of the test medium, the (5) was exposed from 0.12-0.14 g. to 0.01 g. 0.05 g. and 0.1 g. when the 5 compound present was H₂O₂, H₂O₂ and H₂O₂, respectively. The effect on various petroleum hydrocarbons, such as, etc. was similar. Gas oil must be passed over bacteria at 400-450° for 10-15 min. After 5-6 hr. in use bacteria must be regenerated by air at 400° for 1 hr.; the cycle has been repeated 10 times without deterioration of the catalyst being observed. During regeneration H₂O₂ evolved. If H₂O vapour is substituted for air, H₂O₂ is produced.

62-100000

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

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20

CA

Diesel fuel from shale. I. N. V. Hefay and N. I. Zelenin. *J. Applied Chem. (U.S.S.R.)* 40, 841-4 (1947) (in Russian).—A shale-tar fraction, b. 250-350°, d₄²⁰ 0.945, amine pt. 27°, group compo. org. acids 3.5, phenols 6.5, neutral O compds. 21.0, unsatd. and aromatic compds. 47, paraffins and cycloparaffins 23.0%. showed the following cetane nos.: originally 25, after extn. of org. acids (with 5% Na₂CO₃) 35, after extn. of phenols 41, after extn. of neutral O compds. (with FeCl₃ + HCl) 31, after extn. of unsatd. and aromatic compds. (by sulfonation) 53. H₂SO₄ does not improve the antidetonation properties of the fuel, inasmuch as it eliminates not only the aromatic and unsatd. compds. but also part of the neutral O compds. Lighter fractions of the fuel have somewhat higher cetane nos., consequently, lighter fractional compo. is advantageous; e.g., b. 225-325, 225-350, 325-350, and 250-350°, cetane no. 45, 42, 29, and 32, resp. The 1st-named fuel, dephenitized, proved satisfactory in Diesel motor operation; its characteristics are d₄²⁰ 0.8845, viscosity at 20 and 80°, 1.23 and 1.08° Engler, f.p. -60°, S content 0.9%.

N. Thon

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ARONOV, Sergey Nikolayevich, kand.tekhn.nauk; YERSHOV, N.Ya., inzh.,
nauchnyy red.; SMIRNOVA, A.P., red.; RUDAKOVA, N.I., tekhn.red.

[Water-supply structures] Sooruzheniia na vodoprovodnoi seti
i vodovodakh. Moskva, Gos.izd-vo lit-ry po stroit., arkhitekt. i
stroit.materialam, 1959. 157 p. (MIRA 12:8)
(Water-supply engineering)

S/048/63/027/001/025/025
B106/B238

AUTHORS: Lukirskiy, A. P., Brytov, I. A., and Yershov, O. A.
TITLE: Proportional counter tube for soft X-rays
PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya,
v. 27, no. 3, 1963, 446-451

TEXT: The authors studied possible uses for a flow proportional counter they had described previously (Ref. 3: Izv. AN SSSR. Ser. fiz., 27, no. 6, 1963). One drawback to this counter tube was the long preparation time before filling. A much simpler filling process is described, stronger terylene. The gas mixture flows from the reservoir where it is stored under pressure past a needle valve into the counter tube. The gas issuing from the counter passes through an oil trap and escapes into the air. A calcium purifier connected to the pressure reservoir is heated to 250 - 300°C during operation. The mixture is made of argon and methane. It takes 45 - 60 min after the needle valve has been

Card 1/3

S/O48/63/027/003, 023, 025
B106/B238

Proportional counter ...

opened until the characteristics of the counter tube reach steady values. The apparatus is then practically ready for use. This simple, reliable filling process is recommended for flow proportional counters in general. The characteristics of the tube remain constant for a flow rate of 1 bubble per 1 - 3 sec in the oil trap. 1 bubble per second corresponds to a gas consumption of about 50 ccl per hr. The gas reservoir lasts about 200 hours. The counter tube can be used to record radiation between 1.54 and 13.3 μ . The maximum gas amplification, which is within the range where the resolution is proportional to the voltage, depends on the counting rate. The limit of the proportionality range is the product ANC_2 , where A is the gas amplification factor, N the primary ionization, and C_2 the counting rate. The maximum value of the product is estimated at $5 \cdot 10^9$. The "plateau" reaches up to 220 v and is practically level (observed with the broad window from Ref. 1). Increasing the area of the window to 1 mm did not decrease the resolution of the counter tube. For

Card 2/3

Proportional counter ...

3/048/61/022/100, 100
B106/3238

soft rays with wavelengths up to c. 20 Å, the terylene window is replaced by a more transmissive window made of cellulose nitro acetate, and a lower internal pressure is recommended. The operational range of the counter tube can probably be extended by using a thinner terylene window. There are 7 figures.

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University imeni A. A. Zhdanov)
Spetsial'noye konstruktorskoye byuro rentgenovskoy
apparatury (Special Design Office for X-ray Apparatus)

Card 3/3