The group compositions of the products calculated (calc.) in the developed model and obtained experimentally (exp.) by gas chromatography in accordance with [2] are presented in the table.

The sample 1 (exp.) composition of zeoforming products was used in for kinetic constants match. The resulting set of kinetic constants made it possible to calculate the concentrations in the product using the kinetic model. It can be seen that the composition presented in the group form describes the experiment with satisfactory accuracy. The error for individual pseudo-components for sample 1 is 5 10 % (rel.). This set of rate constants was also used to calculate the composition of sample 2. The calculation results are characterized by less satisfactory accuracy, especially for the aromatic hydrocarbons group.

It should be noted that the solution of the inverse kinetic problem by selection endows the model with a statistical character, which limits its predictive ability.

References

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COMPARISON OF DETONATION CHARACTERISTICS OF ZEOFORMING PRODUCTS OBTAINED FROM STABLE GAS CONDENSATE WITH VARIOUS COMPOSITIONS

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Every year the increasing consumption of commercial petroleum products is observed. With the increase of the amount of passenger cars the demand for various petroleum products rises. However more and more oil fields are depleted simply due to their long-lasting exploitation, meanwhile as for new ones, they are estimated to have the significant gas inclusion.

In the process of commercial gas preparation these oil fields with significant gas inclusion, which deliver commercial gas into the main gas pipeline, also obtain by-product – stable gas condensate (SGC).

SGC is a product obtained during low-temperature condensation and rectification of unstable gas condensate in the process of natural gas processing and having hydrocarbons with a number of carbon higher than 5 in its composition.

During this work three samples of SGC which had been obtained from various oil fields in Western Siberia of Russia were analyzed. For these three samples were studied such properties as RON (Research Octane Number), MON (Motor Octane Number), RVP (Reid Vapor Pressure), density under 15 °C and benzene content. These parameters are strictly regulated by the Russian standard USS 32513-2013 "Motor fuels. Unleaded gasoline. Technical conditions" [1]. The analyze results are shown in the table 1.

After analyzing table 1 data we've came to the conclusion that these SGC samples are characterized by comparatively high octane numbers, a low RVP values and extremely little benzene content. This conclusion makes these samples the promising raw material for catalytic processing in order to obtain the blending component of gasoline.

Zeoforming is known as one of the most low-cost and promising methods of processing light hydrocarbon raw materials into components of passenger cars gasoline. The process is carried out under average temperature and reduced pressure on a zeolite catalyst. During the work zeoforming was implemented at a laboratory catalytic plant at a temperature of 375 °C, a pressure of 0.25 MPa and a volumetric feed rate of 2 h^{-1}. We used zeolite of ZSM-5 type which was crushed to a size of

Table 1. Properties of SGC samples

Property	SGC 1	SGC 2	SGC 3
RON, points	66.4	69.0	66.5
MON, points	63.5	65.7	63.4
RVP, kPa	74.1	67.2	58.7
Density under 15 °C, kg/m³	678.8	685.4	685.5
Benzene content, vol. %	0.14	0.10	0.14

Table 2. Properties of zeoforming products

Property	ZP 1	ZP 2	ZP 3
RON, points	88.4	86.1	82.6
MON, points	84.1	81.3	77.8
RVP, kPa	153.6	168.5	127.3
Density under 15 °C, kg/m³	681.8	690.6	703.2
Benzene content, % vol.	1.14	1.05	0.93

0.5–1.0 mm. Zeolite was provided by "Novosibirsk chemical concentrates factory". Table 2 shows the zeoforming products (ZP) properties data.

The table 2 data shows the increasing octane number of the product in comparison with the feedstock by an average of 27 %, which sets these obtained products as promising blending components for production of various brands of passenger cars gasoline, despite of exceeding the passenger cars gasoline and slightly exceeding the benzene content, as well as low density values.

References

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INFLUENCE OF THE N-PARAFFIN MOLECULE HYDROCARBON CHAIN LENGTH IN THE COMPOSITION OF DIESEL FUEL ON THE EFFECTIVENESS OF THE DEPRESSANT

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According to the Ministry of Energy in the Russian Federation, there is an increased need for the production of diesel fuel (DF) especially of winter and arctic brands. Such method of obtaining low-freezing brands of diesel fuel as the use of depressant additives makes it possible to avoid significant costs in the development of fuel and simplify the production process. It is known that the content of n-paraffin hydrocarbons in the composition of diesel fuel affects the effectiveness of the depressant additive, and to a greater extent this effect depends on the structure of hydrocarbons [1]. Thus, the aim of this work is to study the effect of the of the n-paraffin molecule hydrocarbon chain length in the composition of diesel fuel on the effectiveness of the depressant.

In the course of the work, the cold filter plugging point (CFPP) was determined for two samples of diesel fuel of various compositions (DF1 and DF2) with the depressant additive (Ad). Next, blends of diesel fuel samples with an additive and the addition of n-paraffin hydrocarbons (n PH) were prepared and CFPP was determined for them.

The representatives of n-paraffins were chosen: cetane ($C_{16}H_{34}$), heptadecan ($C_{17}H_{36}$), heneicosane ($C_{21}H_{44}$) and docosane ($C_{22}H_{46}$). Changes in CFPP of DF/Ad/n-PH blends relative to CFPP of DF/Ad blends are shown in Figures 1 and 2.

Based on Figure 1, it can be seen that the addition of small concentrations (1 and 3 % vol.) of

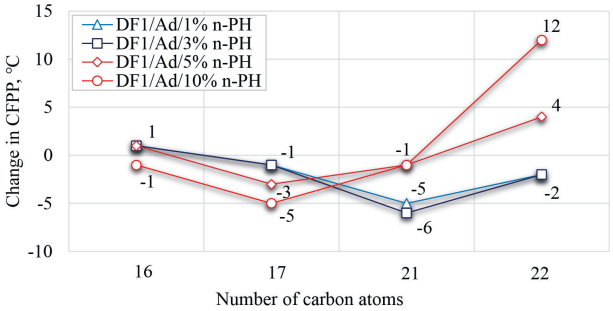

Fig. 1. *Changes in CFPP of DF1/Ad/n-PH blends relative to the properties of DF1/Ad blends*