

## THE CATALYTIC PROCESS OF FUEL OIL

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With the efforts of researchers in Russia and Kazakhstan developed an original process of thermal-chemical processing heavy oil residues of native and destructive origin (fuel oil, tar, heavy pyrolysis resin, cracking residues, waste oils, etc.) in the presence of activators, without analogues abroad and carried out at a pressure of 0.5 to 2 MP, temperature 400-430°C degrees without hydrogen.

As adjuvants are used natural substances sapropelite origin (oil shale, peat, sapropelites etc.). Impact on oil residues studied on the example of the use of oil shale. It is established that the organic and mineral part of oil shale have an activating effect on the thermal transformation of heavy oil products. So, in the temperature region 370-420°C during the degradation of the organic mass of slate (cryogen) form different compounds with the properties of the donor of hydrogen. These connections are actively contribute to the reactions of hydrogenation of unsaturated compounds produced during the cracking of oil residues and hinder from intensive coke formation. On the other hand, the mineral part of oil shale, containing silicates, oxides of iron, molybdenum, cobalt, nickel and other catalytic active metals, also contributes to the intensification of reactions cracking and hydrogenation. If used as adjuvants shale Deposit in the amount of 5-25% and containing 15-70% cryogen is possible to control the thermal cracking of oil residues, carried out in the interval of temperatures 390-450°C, with output of light distillates up to 70% without consideration in a coking operation.

The developed process has important advantages: the absence of special stages DE asphaltting and DE metallization of heavy crude oil, as the information contained in the raw materials asphaltenes, nickel and vanadium in processing of the precipitate of oil shale and together with the products of the reaction are discharged and pipelines; implementation of the process without special expensive catalysts and hydrogen; desulfurization of liquid products by 50-60%; ability to use a simple in technical performance of the equipment of the traditional thermal cracking of oil residues.

All this allows to significantly reduce capital and operating costs for processing heavy crude oil into diesel distillate fractions, which makes it competitive with many modern processes destructive processing of oil residues.

The material balance of the process of catalytic thermal processing of fuel oil is shown below.

Name of the flow	fuel Oil, mass. %
Taken:	
oil residue	87,0
slate :	13,0
including the mineral part	8,4
Total:	100
Received:	
gas:	5,0
total liquid products including:	
l.b. - 180 C	17,7
180-350°C	40,5
360-420°C	12,5
balance above 420°C	
including:	
the mineral part	22,8
water	1,5
Total:	100

Fraction boiling up to 420°C (petrol, diesel and gasoil), after Hydro treating can be used as components of fuels. Cracking residues with boiling point higher 420°C, containing an elaborate fine with the additive, intended for use as a component of the concrete used in the construction and repair of automobile roads.