

## **Thermal transformation of bitumoid of Domanic formations of Tatarstan**

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### **Abstract**

The study focuses on the transformation of the composition of bitumoid in Domanic rocks during the processes of thermal impact on reservoir. Laboratory simulation of thermal effects on the sample of Domanic rocks with a high content of kerogen was taken. Study recorded significant changes in the group composition of bitumoids due to formation of hydrocarbons as a result of destruction of kerogen and set group composition of source bitumoids and ones after exposure. Analysis of the composition of the fraction of saturated hydrocarbons shows that asphaltene content in the selected bitumoids significantly increases. Thermal transformation of bitumoid led to the increase in the fraction of hydrocarbons C19-C30, which is probably due to the decomposition of part of the kerogen. The ratio of isoprenoid alkanes (pristane and phytane), which is the main indicator of the thermal maturity of the oils, is reduced by 1.5 times. Study shows increase the ration of high molecular weight alkanes to alkanes of low molecular weight by several times, which indicates an increase in the degree of maturation of organic matter. Noticeable regularities in the distribution of geochemical parameters on terpanes and sternum not detected. The study was conducted with the use of EPR spectroscopy. Comparison of intensities of the radical of the initial sample and one after the experiment revealed insignificant deviations, which shows an increase in the number of newly formed hydrocarbons during thermal degradation of kerogen. Thermal effect leads to the forming of hydrocarbons by decomposition of kerogen of Domanic rocks. Kerogen containing rocks under thermal effects can be considered as an additional source of moveable hydrocarbons.

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### **Keywords**

Alkanes, Bitumoid, Domanic, Electron paramagnetic resonance (EPR), SARA-analysis, Thermal transformation