

# Study of the rheological properties of heat-treatment products of asphaltic oils in the presence of rock-forming minerals

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## Abstract

© 2015 Springer Science+Business Media New York. The heat-treatment mechanisms of superviscous oil in the presence of naturally occurring catalysts (carbonate rock, alumina, etc.) and carboxylic acid at 290-360°C and 1-1.4 MPa pressure are studied. Analysis of the component composition of the transformed oil indicates the predominance of polycondensation reactions over cracking reactions. Based on IR spectroscopic data, the products are characterized, vis-à-vis the original oil, by reduced content of branched structures and sulfoxide groups. The transformed oil samples differ in the temperature at which the viscosity anomaly index more than doubles. The viscosity of the conversion product can be higher or lower than that of the original oil, depending on the process temperature and the type of the mineral catalytic additive.

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## Keywords

Alumina, Asphaltic oil, Carbonate rock, Carboxylic acid, Cracking, Rheological curves, Steam-thermal action