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Effect of the composition of a gas mixture of oxygen with nitrogen on the process of oxidation of heavy oils

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Abstract

© SGEM2018. In this work to study influence ratio of the components of the gas mixture of oxygen with nitrogen at thermodynamic, kinetic parameters of oxidation oil at reservoir conditions. Mixtures of oxygen with nitrogen were obtained by gravimetric method with different ratios. The oxygen content in the gas mixtures was 3, 15, 21, 40%. The main methods used accelerating rate calorimetry (ARC). Beginning of the combustion (oxidation) process depends on the oxygen content of the gas mixture. The higher oxygen content in the gas mixture, the higher the initial oxidation temperature, but for the gas mixture of oxygen-3%, the oxidation process does not proceed. It should be noted that the higher oxygen content, higher the rate of combustion and the end of the process occurs earlier. Kinetic parameters (activation energy, reaction rate, etc.) of oxidation processes of heavy oils were obtained. It was found that increasing the oxygen content in the gas mixture the activation energy is considerably reduced. The most effective mixtures of gases have been identified for their possible application in real deposits.

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Keywords

ARC, Gas mixture, Kinetics parameters

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