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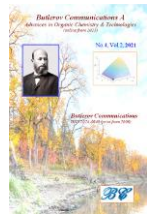

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Composition and properties of oil from Priozernoye field

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Abstract

The paper presents the results of a study of the physicochemical properties, group-type and structural-group-type compositions of oil from the Priozernoye field, located on the Kerch Peninsula of the Republic of Crimea. Based on the results obtained, proposals are made on possible directions of processing this oil. Physicochemical properties, determined using standard analysis methods, showed that this oil has a number of properties that should have a favorable effect on the quality of oil products obtained from it: low sulfur and solid paraffin content, low pour point, relatively low kinematic viscosity. The density of oil is 931 kg/m^3, so oil is classified as bitumen, while other physicochemical indicators (viscosity, content of asphalt-resinous substances) deny this assignment. An explanation of this fact is proposed on the basis of the group-type and structure-group-type composition of oil using modern instrumental research methods: GC, IR spectroscopy, HPLC, ^{1}H NMR spectrometry. It was established by GC that the oil of Priozernoye field belongs to the naphthenic-aromatic type of oils. HPLC confirmed the presence of a significant proportion of aromatic structures (18.6%) in the composition of compounds contained in oil and revealed a high proportion of polar heteroatom-containing compounds (41.4% in total), which will have a serious impact on the behavior of oil in various technological processes. for example, to promote the formation of stable oil-water emulsions. IR showed that most of the compounds are aliphatic structures (Cal > Car) and these structures are highly branched alkanes and cyclanes with a large number of side chains, which follows from the ^{1}H NMR data. On the basis of the physicochemical properties data of oil and its chemical composition, a

fuel-oil version of oil refining from the Priozernoye field with the production of marine fuel and mineral oils is proposed.

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