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IN SIGHT

Osipenko A.V.

The value of the building pricing reform in application modern methods of construction for modernization of refineries

Keywords: innovation, building methods, modernization of refineries, building pricing reform, economic efficiency.

Abstract. The author reviews the current situation on the market of modern petrochemical construction processes and materials as well as realized refineries revamping projects. The author presents the most progressive construction methods in Russia. The article features such burning issues as implementation of innovating construction processes. The article demonstrates the key role of construction materials pricing reform. The article features the legal and technical aspects of the current situation of construction materials pricing systems in Russian. According to the given analysis, the author produces the most effective solution of innovative construction processes implementation.

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PETROLEUM PRODUCTS: TECHNOLOGY, INNOVATION, MARKET

Soroush Ahmadi, Khoutorianski F.M., Yergina E.V.

Development of high-efficient composite demulsifier for preparation of heavy high-viscosity oils

Keywords: composite demulsifiers, deep dehydration and desalting, heavy high-viscosity oils, surfactants, demulsibility/

Abstract. At refineries, demulsifiers are used for breaking emulsions in oil dehydration and desalting processes on the electrical desalting plants. Making composite demulsifiers is a promising way to develop highly effective and universal demulsifiers for destruction of emulsions formed on preparation of heavy high-viscosity oils on the electrical desalting plants. In this paper, laboratory results of the demulsibility studies of surface-active agents (surfactants) with various functional purposes are given to develop an effective new composite demulsifier. Surfactants with maximum demulsification efficiency were selected from components of each group. Optimization of formulation for the new developed composite demulsifier was carried out by destruction of high-viscosity oil emulsion. The developed composite demulsifier was used for breaking resistant water-in-oil emulsions related to heavy oil samples. In these studies, developed demulsifier was compared with traditional Russian and the most popular foreign demulsifiers. The high efficiency of the developed demulsifier was shown based on data obtained.

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Shahmuradov S.T., Aghamaliyev Z.Z., Majidov E.A., Abbaszade S.M., Rasulov Ch.K., Nazarov I.G.

The catalitic cycloalkylation reactions of *para*-chlorophenol of 1-methylcycloalkenes

Keywords: para-chlorophenol, 1-methylcyclopentene, 1-methylcyclohexene, cycloalkylation, catalyst, 2-(1-methylcycloalkyl)-4-chlorophenol.

Abstract. In the article it was mentioned about the synthesis of 2-(1-methylcyclopentyl)- and 2-(1-methylcyclohexyl)-4-chlorophenols from the cycloalkylation reactions of para-chlorophenols with 1-methylcyclopentene and 1-methylcyclohexene in the presence of КУ-23 as a catalyst. It was determined that the actual yield of products 2-(1-methylcycloalkyl)-4-chlorophenols – are 67.4-71.5% and the selectivities of them are 92.5-95.4% when the temperature 110-120°C, mol ratio of *para*-chlorophenol to cycloalkene 1:1, rate of volume flow – 0.5 h^{-1}

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MATHEMATICAL SIMULATION

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Dependence between different viscosity coefficients for oil products

Keywords: GOST 11503-74, viscosity, oil products.

Abstract. Results of investigation of dependence between different viscosity coefficients for oil products are given in the paper.

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Gasanov A.G., Memmedbeyli E.G., Jafarov R.P., Ayyubov I.G.,
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Optimization of the process of receiving of racemic and optically active forms of monoesters of norbornenedicarboxylic acid

Keywords: cyclopentadiene, monoesters of maleic acid, optically active forms, diene synthesis, norbornenedicarboxylic acid, optimization,

Abstract. On the basis of experimental data the regression mathematical model of the process of obtaining racemic and optically active forms of monoesters of norbornenedicarboxylic acid, reflecting the influence of the main technological factors (the ratio of catalyst and dienophil and temperature) to total and optically desired product yield has been developed. Statistical analysis of the resulting model has been carried out, and the adequacy of the developed model to experimental data has been proved. The optimal values of the input parameters for the reaching of the maximum yield of total and optically yield of monoesters of norbornenedicarboxylic acid have been founded.

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CHEMMOTOLOGOS

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Assessment of the ability of motor oils to hold soot in the particulate suspended in the diesel engine YaMZ-652

Keywords: engine oils, soot, dispersive properties diesel engine.

Abstract. “Avtodizel” has done the tests of the foreign motor oil (viscosity grade SAE 15W-40 API CJ-4) and Russian longlife motor oil (viscosity grade SAE 15W-40 group “D” GOST 14749.1 higher value of the base number) in the engine YaMZ-652 (environmental class 4) during 150 hours. Motor oils vary by the rating of dispersibility which the company Lubrizol defined by the laboratory method. Foreign motor oil has a higher rating of dispersibility defining by laboratory method compared with Russian motor oil. There was less growth of viscosity level of the foreign motor oil during bench tests in the engine. The amount of contamination of the crankcase parts of engine varies considerably when using these motor oils (the bigger amount has Russian oil).

The tests showed that it is possible to use the engine YaMZ-652 to assess the ability of motor oils to hold the soot in a suspended fine-grained condition. A certain comparability of these results was identified with the data of known test method of motor oils MackT8E. The test method for motor oils (with criteria of evaluating the increasing of viscosity of the oils, the content of insoluble precipitates, the amount of contamination of the cylinder head cover of the deposits) in engine YaMZ-652 during 150 hours is included in technical requirements of PJSC "Avtodizel" for motor oils (RD 37.319.034-20017).

The conclusion:

- There is the necessity of increasing the level of operational properties of Russian motor oils.
- The production of new products with effective dispersants that can hold contaminants insuspension without deposition on surface of engine parts is needed.

It was proposed to elaborate laboratory methods for determining dispersible-stabilizing properties of fresh oils. These lab methods will allow doing preliminary assessment of the operational properties of motor oils and their components before testing in the engines.

PJSC «Avtodizel» [Yaroslavl' Motor Plant]

ECOLOGY
and INDUSTRIAL SAFETY

Perkhutkin V.P., Berdnik A.G., Grunskoy T.V.

Analysis and evaluation of the production traumatism of the underground personnel at the oil fields of the Yaregsky deposit

Keywords: oilmine, accident, risk assessment, Yaregskoye field, underground personnel, thermoshaft method, analysis of occupational injuries, frequency factor, probability of safe operation.

Abstract. The Yaregskoye field is unique in the mine method of oil production due to the heating of the formation with the injection of the coolant, which has created special working conditions for underground personnel. The technology used for heavy oil production has formed a structure of harmful and dangerous production factors (H and DPF), which in turn carry the risk of occupational injuries.
The degree of labor hazard in the mine of the oil industry is determined by a number of factors: working conditions, the specifics of the field, the state of the material and technical base, the level of training and qualification of the personnel, the organization of labor, industrial discipline, and compliance with labor and safety regulations. The expediency of assessing occupational injuries of workers is due to the fact that its reasons are often unfavorable working conditions at the enterprise, violations of labor protection and safety requirements at workplaces and unsatisfactory organization of production.
The high level of industrial injuries for the last 10 years in the extractive oil industry indicates a lack of ongoing measures to reduce the impact of the H and DPF and ensure safe working conditions. In the course of labor activity, the personnel, as a rule, is exposed simultaneously to not only working conditions, but also other factors of the working environment and the labor process. Taking into account that the prospects for the development of oil refineries are directly related to the risk of injury, due to the increased stress on the psychophysical condition of the underground personnel, which necessitates conducting a variety of studies to assess their complex effect on the body.
The study of the causes of accidents proves that occupational traumatism is a complex phenomenon in which objective and subjective causes are intertwined. According to long-term observations, unforeseen causes (rock blows, collapses, flooding) are only 2.2%, technical reasons (shortcomings of machines and technologies) - 9.8%, and organizational reasons - 86.5% of all injuries in petroleum tanks. The probability of the death of the underground personnel of petroleum shovels is an order of magnitude higher in comparison with the permissible risk during the year.

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ANALYTIC METHODS
FOR OIL and PETROLEUM PRODUCTS

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Alternative method to control temperature of flash of motor oils various basic basis

Keywords: oil thermostating, volatility, test time.

Abstract. The results of the determination of the flash point of motor oils of various basic bases are presented. A comparative evaluation of the results obtained with the application of the proposed method is carried out.

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