

BASIC PROPERTIES OF MINERAL OILS OF PETROLEUM ORIGIN

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***Annotation.** This thesis provides information on quality requirements and basic physicochemical and performance properties such as demulsifying, anti-foaming and deaeration, chemical and thermal stability, sulfur content, acidity, purity, flash point, low temperature, viscosity index, lubricity and viscosity of diesel and energy petroleum oils.*

***Key words:** chemical and thermal stability, sulfur content, acidity, purity, flash point, low temperature, viscosity index, lubricity of diesel oils, lubricating properties, friction.*

Regardless of the purpose and conditions of use, the main functions of the lubricant are to reduce friction forces between mating parts and reduce their wear, remove heat and remove wear products from the friction zone, as well as protect rubbing surfaces from the corrosive effects of the external environment [1].

Along with the main functions, nowadays, due to the improvement of the designs of machines and mechanisms, the intensification of their work and the tightening of the conditions for the use of lubricants, the importance of their additional functions and properties has increased: sealing gaps, dispersing and removing deposits from oil systems, resistance to foaming and emulsification of water [1,2].

Lubricating oil can perform its functions for a long time and reliably only if its properties precisely correspond to the physical and chemical influences to which the oil is exposed in the lubrication system of machines and mechanisms. Requirements for lubricating oils can be divided into general, special (or technical) depending on the types of oils (according to their intended purpose), environmental

and economic [2].

The general requirements are mostly advisory in nature. Under the conditions of the market mechanism for setting prices for industrial products, economic requirements, as a rule, cannot be specific. Environmental requirements, along with their general nature, also contain specific standards (for oil components, additives), for example, maximum permissible concentrations (MACs), limits for explosive concentrations of substances. Technical requirements for individual types of lubricating oils are always specific. They contain standards for oil quality indicators approved by special bodies, are published in the form of standards or technical specifications, and are given in the relevant oil reference books or regulatory documents for lubricants [1,2].

General requirements for lubricating oils are quite high. They should reduce wear, prevent scuffing and seizing of rubbing parts;

have good washing and dispersing properties to ensure the cleanliness of the cylinder-piston group of other engine parts;

have high antioxidant properties and thermal stability to reduce the accumulation of oxidation products in the oil, prevent the formation of soot and deposits on parts;

protect friction units of machines and mechanisms from corrosion;

have viscosity, viscosity-temperature and low-temperature properties, ensuring reliable pumping of oil, cooling and lubrication of friction units at all operating temperatures;

meet the requirements of environmental standards (do not contain toxic substances);

have an affordable price and a secure raw material base (non-scarce and stable) [1,3].

In addition to the above requirements, special requirements apply to certain types of oils. For example, motor oils must have low foaming, emulsifying properties, and volatility (low consumption of waste in the engine). Thickened oils (containing viscosity additives) must be resistant to mechanical and thermal

destruction of additives (of polymer origin) [2,3].

Energy oils, in particular non-oils, must have a high level of demulsifying, anti-corrosion and anti-wear properties. Energy (compressor) oils used in air compressors must remain stable for a long time and not form coke deposits in compressor injection systems at elevated temperatures (up to 180 0C) [1,2].

Demulsifying properties - characterize the ability of an oil to release sediment into emulsified water. Water-oil emulsions sharply reduce performance indicators: they worsen the lubricating, anti-corrosion, low-temperature, viscous and viscosity-temperature properties of the oil. To improve demulsifying properties, it is necessary to add additives – demulsifiers – to oils [1,4,5].

The creation of mini-complexes for the production of petroleum oils in the world allows employment of the population, reducing transport costs and allowing the production of high-quality final products.

Literature

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