DOI: 10.31081/1681-309X-2022-0-6-23-28 Specialty 161. U.D.C. 662.7

MARINE FUEL WITH LOW SULFUR CONTENT, PRODUCTION PROSPECTS IN UKRAINE

© **A.V. Chernyavsky, A.B. Grigorov**, Doctor of Technical Sciences (National Technical University "Kharkiv Polytechnic Institute", 61002, Kharkiv, Kirpicheva st., 2, Ukraine)

The article considers the main global trends in the use of fuel for shipping. The necessity of replacing marine fuel oils of the F-5 and F-12 grades, which are currently widely used by the merchant fleet of Ukraine, with new fuels with a low sulfur content, such as marine gas oil (MGO) or low sulfur marine gas oil (LS-MGO), is substantiated.

The main problems are characterized, and in turn, they may arise during the transition of shipping to new types of fuel taking into account the role of cargo transportation by sea. Directions for solving these problems without a significant impact on the cost of cargo transportation are proposed, consisting of the selection of raw materials, their preliminary processing, the use of the latest processing technologies and compounding of finished commercial products. The selection of raw materials consists of determining the types and grades of raw materials that are provided with sufficient industrial reserves for the implementation of the selected technology and are characterized by a certain level of quality, for example, low (<0.5 %) sulfur content. The use of the latest technologies consists of thermal (cracking, pyrolysis) and thermocatalytic (catalytic cracking and pyrolysis, hydrotreating and hydrocracking) processes for obtaining fuel with a low sulfur content from hydrocarbon raw materials. Fuel compounding occurs with components with a significantly lower sulfur content. For this, various petroleum distillates, commercial fuels, some liquid products of coal gasification, as well as products of thermal degradation of polymer raw materials can be used. In practice, in the production of marine fuel with a low sulfur content, the most effective combination of several directions in a single technological chain: "selection of raw materials - the latest technologies" or "selection of raw materials - the latest technologies - compounding".

Considering the above, it is shown that at present one of the most promising technological processes for the production of motor fuels, in particular marine ones, in Ukraine catalytic pyrolysis of secondary polymer raw materials on zeolites can be considered.

Key words: marine fuel, sulfur, shipping, environmental requirements, polymers, pyrolysis, catalyst, petroleum distillates, coal gasification products.

Corresponding author: A.B. Grigorov, e-mail: grigorovandrey@ukr.net