

OPTIMIZATION OF ADDITIVE PACKAGE IN MOTOR FUELS

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Additives in the fuel, in particular motor, play a very important role. It is to improve its properties: physico-chemical, operational and environmental. In addition, additives make up a significant part of the cost of motor fuels. Because almost all additives currently used in motor fuels are imported to Ukraine from abroad. Thus, the development of a balanced package of additives for motor fuels looks quite an urgent task. Moreover, not only in view of the properties of fuel, but also its cost.

The modern package of additives for gasoline consists of detonators, detergents, antioxidants and anti-corrosion additives. For diesel fuels, this package can be supplemented with ignition promoters, depressants, dispersants, biocides, anti-smoke and anti-wear additives. These additives are introduced into the fuel in a certain sequence and proportions, with constant stirring of the fuel at a certain temperature. In itself, this process is complex and takes some time to implement. Thus, very often, at interaction of additives among themselves there is a phenomenon of loss of their activity. Quite often, alcohols are added to the composition of motor fuels, which can be considered as a complex additive [1, 2]. This additive increases the resistance to detonation and washing properties of gasoline. Also, the addition of alcohols to motor fuels increases their completeness of combustion and environmental friendliness. But the fuels thus obtained are not physically stable, especially in the presence of water.

These complications can be avoided by using additives with multifunctional properties in the composition of motor fuels. That is, it simultaneously improves some properties. At the same time, such an additive should have a low cost and be produced on an industrial scale. Thus, in our opinion, as such an additive can be offered 1,3-diphenyltriazene (formula $C_{12}H_{11}N_3$).

Addition to motor fuels of 1,3-diphenyltriazene in an amount of up to 1.0 wt. % allows to increase octane and cetane numbers of fuels, their depressor and anticorrosive properties. This substance is also well soluble in hydrocarbon fuels and is a dye (able to paint the fuel yellow or orange). This property can be used in the creation of new branded motor fuels, which by their properties belong to the premium class.

Thus, the use of 1,3-diphenyltriazene in motor fuels will slow down the technology of production of compounded commercial fuels, prevent the loss of activity of additives and reduce the cost of their production.

References

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