

SIGNIFICANCE OF DETERGENT ADDITIVES ON DIESEL FUEL

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Annotation: *In this article, the specific aspects of diesel fuel, information about types and main functions is collected. Also, the components of diesel fuel and the importance of its use were considered.*

Key words: *exhaust parameters, gas safety, optimal combustion period, "low sulfur", Fischer-Tropsch diesel, Oil diesel, compression stroke, armored combat vehicles.*

Diesel fuel is a much older but still required type of fuel for reciprocating diesel engines. If earlier its coverage was limited due to poor quality and toxic combustion products, now more passenger cars are equipped with diesel engines, and scientists are working to improve performance and make diesel fuel environmentally friendly. Diesel fuel is a heavy fraction of oil, based on hydrocarbons with a high boiling point - 200-350°C. Diesel and gas are used as fuel in diesel engines. Diesel fuel is a heavy fraction of oil, based on hydrocarbons with a high boiling point - 200-350°C. Diesel and gas are used as fuel in diesel engines. Externally, diesel fuel is a transparent liquid, its viscosity is higher than that of gasoline, and its color can be both yellow and brown in different shades. The color is affected by resins in the fuel. Every time it burns what fuel produces energy. Diesel fuel, this is the main task in addition, it performs several other important functions in the operation of the engine. It lubricates the friction surfaces of fuel injectors and pumps, cools the walls of the combustion chamber and regulates exhaust parameters in engines. Sea and river ships, locomotives, military and agriculture machinery, trucks - almost all heavy vehicles are diesel works on engines. In recent decades, passenger cars running on diesel fuel have become popular in developed European countries. Fuel consumption is 40% lower in a diesel engine, traction, power, throughput and exhaust gas safety are higher than in a gasoline engine. Diesel fuel is an economical fuel in terms of performance and cost. It is used in diesel generators of stationary and mobile power stations, boilers of autonomous heating systems [1]. For the normal operation of diesel fuels, fuels with an optimal auto-ignition period, including an optimal cetane number, are needed. Fuels with a cetane number of 45-50 are required for high-speed engines -locomotives, cars and tractors. Diesel fuels directly extracted from oil meet this demand and the cetane number is 45. However, diesel fuels with a cetane number less than 45 are obtained from the extraction of some oils and special additives are added to them. Sulfur is an important pollutant component of diesel, and many has been an object of regulation. Conventional "regular" grades of diesel fuel contain 5,000 parts per million (ppm) of sulfur by weight. In the 1990s, "low sulfur" varieties with a sulfur content of no more than 500 ppm were introduced, and even lower sulfur levels were required in later years. Regulations in the United States as of 2010 highways required that diesel fuels

sold for sale be of "ultra-low sulfur" (ULSD) grades containing a maximum of 15 ppm. In the European Union, according to regulations, from 2009, diesel fuel sold for road vehicles must only be "zero sulfur" or "sulphur free" diesel fuel, containing no more than 10 ppm. The low sulfur content reduces emissions of sulfur compounds associated with acid rain and allows diesel vehicles to be equipped with highly effective emission control systems that are harmed by high sulfur concentrations. Heavier grades of diesel for vehicles, ships and boats, and stationary engines are generally permitted to have higher sulfur content, although the trend has been to lower limits for these grades as well.

In addition to conventional petroleum-refined diesel, synthetic diesel or Fischer-Tropsch diesel can be produced from natural gas, coal-derived syngas (see coal use), or biomass-derived biogas[2]. Also, biodiesel, biofuel, mainly soybean or oil can be made from oil plants such as palm. These alternative diesel fuels can be used alone in diesel engines without mixing or modification with conventional diesel fuel and have very low sulfur content. Alternative diesel fuel is often offered as a means of reducing dependence on oil and reducing overall emissions, but only biodiesel can ensure the life cycle of carbon dioxide. Petroleum diesel has a density of about 0.85 kg/l (7.09 lbs/gallon (us)), which is 18 percent higher than gasoline, which has a density of 0.72 kg/l (6.01 lbs/gallon (us)). When It is burned, diesel typically emits 38.6 MJ/L (138,700 BTUs per US gallon), while gasoline emits

34.9 MJ/L (125,000 BTUs per US gallon), which is 10 percent less[3]. in energy density, but 45.41 MJ/kg and 48.47 MJ/kg, 6.7 percent higher in specific energy. Gasoline is easier to clean than diesel fuel. Diesel prices traditionally rise in the colder months because of increased demand for heating oil, which is refined as well. Due to the higher level of pollutants, diesel must undergo additional filtration, which is sometimes more expensive.

Some in the Gulf of Mexico due to higher diesel prices

include the closure of refineries, the diversion of bulk refining capacity to gasoline production, and the recent shift to ultra-low sulfur diesel (ULSD), which has caused infrastructural complications. Unlike gasoline ether and liquefied natural gas engines, diesel engines do not use high voltage spark plugs (spark plugs). The high in-cylinder temperatures cause the diesel fuel to react (combustion or oxidation) with the oxygen in the mixture, heating and expanding the burning mixture to convert the heat/pressure difference into mechanical work; i.e. piston displacement. (Minimum operation of engine starting cylinders used to run up to temperature. Higher compression ratios and lean operation generally make diesel engines more efficient than multi-spark engines. The quality of diesel fuel also depends on good purification of raw materials. For different climatic conditions, there are types of fuel that differ in solidification temperature, fraction composition and other parameters (intended for very cold places, winter and summer) [4]. In conclusion, it should be noted that diesel is less flammable and explosive than gasoline, which is the main reason for the military use of diesel fuel in armored combat vehicles such as tanks and trucks. Diesel engines also produce more torque and are less likely to stall after being controlled by a mechanical or electronic controller. In some climates, unlike gasoline or other fuels, as the fuel temperature drops, its viscosity increases rapidly, turning into a non-flowing gel at temperatures down to -19°C. -

2.2°F) or -15°C (+5°F), which cannot be pumped by normal fuel pumps. Contains special low-temperature diesel additives, which and keeps it more liquid at lower temperatures, but starting a diesel engine in very cold weather is still a big challenge.

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