

EN 590 DIESEL-SURE TEST KIT Patent pending

European Standard EN 590 for temperate climates (Valid since 1 January 2000)

Why test diesel?

Economic supply and demand phenomena as well as efforts to make paraffin and heating oil more affordable have resulted in a large price difference to that of diesel. The on going price increases to diesel have encouraged non law abiding people to use alternative fuels in their vehicles. Although most diesel engines will run on paraffin/ heating oil, continuous operation will cause long-term damage. Several original equipment manufactures have issued statements to the effect that engine warranties will not be honoured where failures can be attributed to the use of fuel blends. It is also illegal to run a vehicle on a blend as it evades fuel taxes.

The EN 590 DIESEL-SURE kit is designed to detect diesel fuel that fails to meet the current European Standard EN 590 diesel density specification (for temperate climates)

Apparatus

100ml. Glass bottle with a white cap and suspended housing containing a black pellet.

Testing Procedure

1. If you are going to test fuel before making a purchase, obtain permission from the seller.
2. Ensure that the temperature of the fuel is between 15-25 Degrees Celsius.
3. Fill the glass container up to the 80ml. mark.
4. Screw on the white cap.
5. Observe whether the black pellet floats or sinks. If the pellet does **not float** to the surface, this indicates that the fuel **does not comply** with the current EN 590 specification.
6. Observe the clarity of the fuel and check for contamination by water, which may exist in suspension, emulsion or as droplets near the bottom.
7. Look for solid particles (dirt and mud) either suspended or as sediment at the bottom of the glass container, clear signs of contaminated fuel.

If the fuel is acceptable, pour the contents of the glass bottle into your fuel tank. DIESEL-SURE test kits are inert and will not contaminate fuel. Replace the cap, there is no need to rinse the inside of the apparatus.

Do not store fuel in the glass container, it may affect the clear housing. If the housing swells due to prolonged exposure to fuel, simply wash it with a mild detergent and lukewarm water and leave it in the sun for a few hours.

Question and Answers

Can a diesel engine run on fuel other than diesel?

The short answer to this question is yes. A diesel engine burns fuel without a spark by injecting an exact amount of fuel into a cylinder containing air that is made hot enough to burn the fuel by compression alone. Hence diesel engines fall into the family of compression ignition engines as opposed to spark ignition engines. Provided the fuel will burn at the temperature created by compression, the engine will run. History shows that diesel engines have been manipulated to run on a variety of substances including sunflower oil, coconut oil, cottonseed oil, buttermilk, turpentine and paraffin. Nevertheless, these products may cause harmful long-term effects including the formation of carbon deposits and excessive wear, leading to eventual failure of fuel injection system.

What will happen if a diesel engine is run on paraffin?

There are reports of diesel engines that have run for hundreds of kilometres on unadulterated paraffin, however, there are many cases where failures have occurred within a very short period. What is indisputable is that paraffin will ultimately damage a diesel engine.

What will happen if a diesel engine is run on paraffin? - Continued.

Firstly, paraffin has a lower viscosity and inferior lubricating properties compared to diesel. Thus, fuel delivery pumps (which must be lubricated by the fuel they pump) will last only a fraction of their normal lives and injectors will wear faster and have an increased chance of blocking. Secondly, paraffin reduces the flame point and cetane number of diesel and causes the engine to run at a higher temperature, often damaging engine components.

Can the EN 590 DIESEL-SURE test guarantee that the fuel contains no paraffin or heating oil?

No. The EN 590 DIESEL-SURE test is designed to identify fuel that does not conform to the current European Standard EN 590 for diesel fuel. Refineries throughout the world do cut diesel with small proportions of paraffin to improve winter flow properties. However, the product sold as diesel must still conform to specification.

What percentages of paraffin or heating oil will the DIESEL-SURE test kit detect in diesel?

It all depends on the specification of the diesel fuel that you are testing but an estimate is as follows:

Paraffin	18% to 20%
Heating oil	28% to 30%

We do recommend that the DIESEL-SURE test kit is only used as a guide and should you require a more accurate result that the fuel in question is sent to a fuel laboratory for a full analysis.

Disclaimer

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The answer is in the smoke.

We can generally understand what is wrong with a diesel engine by the colour of smoke emitted from the exhaust. There are three basic colours black, white and blue.

Black smoke.

This is due to an air to fuel ratio imbalance, either the fuel system is delivering too much fuel into the engine or there is not enough clean air (oxygen) a few things to look for:

- Faulty injectors (injectors need attention at about 100.000 to 120 000 miles)
- Faulty injector pump
- Dirty air cleaner
- Turbocharger or intercooler faulty
- Problems within cylinder head, valves clogged up due to faulty EGR (exhaust gas recycling unit)

White smoke.

Normally means that the fuel injected into the cylinder is not burning correctly. The smoke will burn your eyes.

- Engine/pump timing out
- Fuel starvation to the pump causing the pumps timing not to operate correctly
- Low engine compression
- Water/petrol in the fuel

Blue smoke.

The engine is burning engine oil.

- Worn cylinders or piston rings
- Faulty valves or valve stem seals
- Engine over full with engine oil
- Faulty injector pump/lift pump allowing engine oil to be mixed with the diesel

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