

GASOLINE ANALYSIS - OVERVIEW

In August 2011, CAD Railways Industries commissioned a thorough gasoline analysis of regular 87 pump grade gasoline purchased at a local ESSO gas station in Montreal, Quebec, Canada. Fifteen (15) individual certified tests (see OTI CANADA GROUP Gasoline Analysis) were performed to compare thirty-two (32) different chemical properties of the gasoline, both before and after being mixed with Eco-Fuel Saver Fuel Reformulator (EFS). These tests were performed by several independent laboratories under the guidance of the OTI Canada Group. The tests are ASE, ASTM, CARB, EPA, and Canadian EPA certified.

The conclusion to these comprehensive tests was that Eco-Fuel Saver did not substantially alter the liquid, chemical properties of gasoline and is safe to run in all gasoline engine applications. In most instances, large commercial fleets are concerned more with the quality of the fuel than even the efficiency of the fuel. Fuel quality directly impacts engine longevity and businesses make their money by keeping their engines and equipment in service, moving up and down the road or doing the work the engine was intended to do.

Eco-Fuel Saver does not negatively alter gasoline in its liquid, chemical state. In fact, it slightly improves fuel quality. Eco-Fuel Saver enhanced gasoline offers fuel with a reduction in unwashed gums, benzene, and sulfur, and an increase in available octane. Eco-Fuel Saver also increases the gross heat of combustion of the fuel.

Benzene is a natural part of crude oil and gasoline. However, as early as 1948, the American Petroleum Institute stated that it is generally considered that the only safe concentration of benzene is ZERO. The DHAS, OHSA, and the CDC have determined that benzene is a hazardous chemical that causes cancer in humans and should be considered a carcinogenic substance. Benzene exposure can cause bone marrow to not produce enough red blood cells, which can lead to anemia. It can also damage the immune system by changing the levels of antibodies in the blood and can cause the loss of white blood cells. This can lead to leukemia, a cancer of the blood forming organs. Therefore, Eco-Fuel

Saver's decrease in benzene levels of one half of one percent is extremely important.

Likewise, sulfur is naturally occurring in crude oil and all gasoline and diesel fuel. Elemental sulfur is needed by ALL living things and is an important part of the human body's essential amino acids. However, coal and all oil based fuels release sulfur dioxide (SO_2) when the fuel is burned. This sulfur dioxide reacts with the water and oxygen in the atmosphere to produce the extremely caustic compounds of sulfuric acid (H_2SO_4) and sulfurous acid (H_2SO_3). Both of these compounds wreak havoc on our environment in what is known as acid rain. Acid rain lowers the pH of soils and water, poisoning and killing plants, aquatic and animal life, and weakens and destroys man-made buildings, bridges, monuments and other structures. Eco-Fuel Saver's reformulation of the fuel allows for a more complete combustion of the sulfur in the fuel. This reduces the sulfur content escaping into the environment by a whopping eight and one-half (8.5%) percent.

It is interesting to note the slight increase in both the research octane number and the motor octane number. Octane is a specific compound that is added to fuel to help control the combustion of the fuel for a more desirable reaction. Eco-Fuel Saver's patent pending process uses its own proprietary catalyst to control the rate of combustion for a more desirable and efficient chemical reaction of the fuel. The interesting side effect of using Eco-Fuel Saver in gasoline is that it strengthens the existing octane in the fuel.

"Gross heat of combustion" is a measurement of the total amount of potential chemical energy that is available at or during combustion. Eco-Fuel Saver's proprietary catalyst increases the total amount of potential chemical energy (BTU's) that is available for the engine to convert into mechanical energy. Simply put, EFS helps the fuel, with the aid of the engine, to do what it was designed to do. EFS allows the fuel to combust more completely, through a series of rapid chemical reactions that turn liquid (potential) chemical energy into mechanical energy.

All other chemical properties of gasoline remain the same or are improved. Eco-Fuel Saver enhanced fuels meet all local, state, provincial, and federal fuel standards. Therefore, there are no warranty issues. Nor are there

issues or worries with fuel tanks, fuel lines, injectors, injector pumps, or engines.

Eco-Fuel Saver helps facilitate more complete combustion in the combustion chamber, where many, many chemical reactions are rapidly taking place. Under the increased temperatures and pressures in the combustion chamber, Eco-Fuel Saver's reduced coefficient of friction allows for better and more complete atomization and combustion of the fuel. In most applications, this results in a significant improvement in fuel efficiency while significantly reducing engine emissions.