

A Concise Explanation of Cataclean Fuel Treatment February 2019.

Summary from Robert Vernon Ainscow 14th October 2013.

Cataclean[®], a patented fuel treatment, comprises of a unique blend of hydrocarbons and known fuel constituents. These components are recognised to be compatible for use in internal combustion engines. Some of the components have been studied and proven to have a positive effect on the efficiency of the fuel combustion process while other components act as pre-combustion solvents to remove the build-up of component contaminants.

Part 1. Cataclean as a Fuel Treatment

In internal combustion engines, incomplete combustion occurs under high temperature and pressure when there is a lack of oxygen available to completely oxidise the fuel to CO₂ and water. The by-products of this incomplete oxidation result in environmentally harmful compounds such as; CO, NO_x and a mixture of organic chemicals e.g. Methane, aromatic carbonyls and unsaturated hydrocarbons.

Catalytic converters are included in vehicles to convert these by-products to less harmful chemicals. Overtime the catalytic converter may become less efficient due to build-up of carbon deposits due to incomplete combustion.

The main constituents of the Cataclean formulation are; Acetone, isopropanol, xylene and long-chain hydrocarbons, namely paraffin and has two functions;

1. Produce oxygen to help with oxidation of layer of carbon deposits on the catalytic surface.
2. Produce a carboxylic acid vapour which helps in the cleaning of the catalytic converter.

There have been many studies looking at the individual components of Cataclean and their products of combustion. The main identified products being; Acetaldehyde, Formaldehyde, Alkylperoxides and Hydrogen peroxide.

Aldehydes oxidise to form carboxylic acids which strip away the inorganic contaminants and the catalytic converter can convert hydrogen peroxide to water and oxygen to aid oxidation.

Part 2. Overall effect of Cataclean on internal combustion engine performance

Pre-combustion effects

The Cataclean formulation is differentiated by containing solvents to help remove deposits that may be formed in fuel delivery systems pre-combustion. Deposits may form on fuel

lines, injectors, sensors or filters which result in increased fuel consumption and reduced engine performance.

Acetone is a proven fuel solvent additive that enhances the efficiency of fuel combustion in internal combustion engines. Acetone has been used in race cars since the 1930's to enhance octane rating and make fuel burn efficiently.

Isopropanol, is far less corrosive than other alcohols such as ethanol or methanol. It also offers better solubility in fuel which result in low deposit formation and lower emissions.

Post-combustion effects

As Cataclean components combust with the fuel, the by-products remove deposits, such as carbon build-up from the vehicles exhaust system, catalytic converter and oxygen sensors. The post combustion vapours from Cataclean help to revitalise the catalytic converter so that harmful emissions are removed from the exhaust more readily. This cleaning improves the performance of the catalytic converter and increases vehicle performance.

Therefore, the use of Cataclean at the manufacture's prescribed dosage, cleans fuel systems and improves combustion efficiency.