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SOLUBILITY CONCERNS WITH ADDITIVES

Paul M. Ryder

ConocoPhillips Company, AL-146 BTC, Highway 60&123, Bartlesville, OK 74004 USA

For years, industry has seen instances of fuel filter plugging with a black organic material that could not conclusively be identified. Extensive analytical work has led to the conclusion that a certain chemistry of additive may have a tendency to precipitate out of clean fuels- gasoline and diesel fuel in particular.

The black mystery substance has been identified throughout the distribution system- fuel terminals (tank bottoms/filters), retail outlets (filters), and ultimately customers' vehicles (filters/injectors). Analytical methods used to investigate and characterize the matter included FTIR (Fourier Transform InfraRed), DPMS (Direct Probe Mass Spectrometry), LCMS (Liquid Chromatography Mass Spectrometry), and NMR (Nuclear Magnetic Resonance).

Components much higher in molecular weight than the active ingredients of the fuel additives in use were found in some samples of both the additives and the bottoms of fuel storage tanks. In the filter sludge, there appeared to be a high concentration of the high molecular weight components. Thus, it was concluded that high molecular weight components in the additive precipitated out of the fuel.

Despite these discoveries, there are still some concerns regarding this chemistry of additive. In particular, there is no simple quality assurance method to ensure the additives will not have the high molecular weight components in them. ConocoPhillips will continue efforts to ensure the problem is permanently resolved, including developing a test method to measure the heavy material.