

Forensic Engineering Analysis FOI1231202016 & FOI1231202017

Additives Detection Analysis

Two fuel and two fuel additives were received on January 5th, 2021. One of the gasoline samples was from a car that was suspected to be treated at an auto shop, the other was from a service pump. The two fuel additives are ones that were in suspicion of being used to treat the first gasoline sample. FTIR was used to determine whether the additives were present in the fuel. The results are presented below.

Table 1: Test Results.

LCM Sample ID	Client Sample ID/Description	Results
21.010501-01	[REDACTED]	<p>GC-FID: Typical of E10 gasoline. FTIR: Typical of E10 gasoline.</p> <p>Neither of the additives are detectable in the sample. Likely contains bis (2-ethylhexyl) terephthalate.</p>
21.010501-02	AZ Pump #5	<p>GC-FID: Typical of E10 gasoline. FTIR: Typical of E10 gasoline.</p>
21.010501-03	Wynn's #68917 (injector cleaner) Contains 8 solvents	<p>GC-FID: no match with [REDACTED] or AZ pump. FTIR: no match with [REDACTED] or AZ pump.</p>
21.010501-04	Wynn's #67104 (fuel system cleaner) ~ 70 % diesel	<p>GC-FID: no match with [REDACTED] or AZ pump. FTIR: no match with [REDACTED] or AZ pump.</p>
<p>FTIR: Thermo Nicolet 380 SN: AGL0500626 with Smart Orbit Diamond ATR GC-FID: Thermo Trace GC-Ultra – SN: 320040144</p>		

Comments: By IR spectroscopy and GC-FID, neither of the additives the client has provided was detected in the fuel sample that is believed to contain them. Further analysis, by more sensitive techniques such as GC-MS, could be explored in order to validate the findings by FTIR.