



Separation of Hydrocarbon and BTEX in Gasoline

According to the customer's concern, oxygenates (alcohol, ether, ketone and ester), aromatics and hydrocarbon are critical components in gasoline. The instrumentation condition in this analysis is recorded as follows,

GC: Agilent 7890 w/ FID

Column: GsBP-FFAP

Dimensions: 60 meter x 0.32 mm x 0.5  $\mu$ m

Oven Program: 45 °C for 5 min 5 °C/min to 120 °C for 1min

Carrier Gas: Hydrogen @ 1.3 mL/min (Constant Flow)

Injection: Split flow 50ml/min @ 240 °C, 0.1  $\mu$ L

Detector: FID @ 260 °C

Figure 1. Analysis of Hydrocarbon and BTEX in Gasoline using GsBP-I nowax GC column

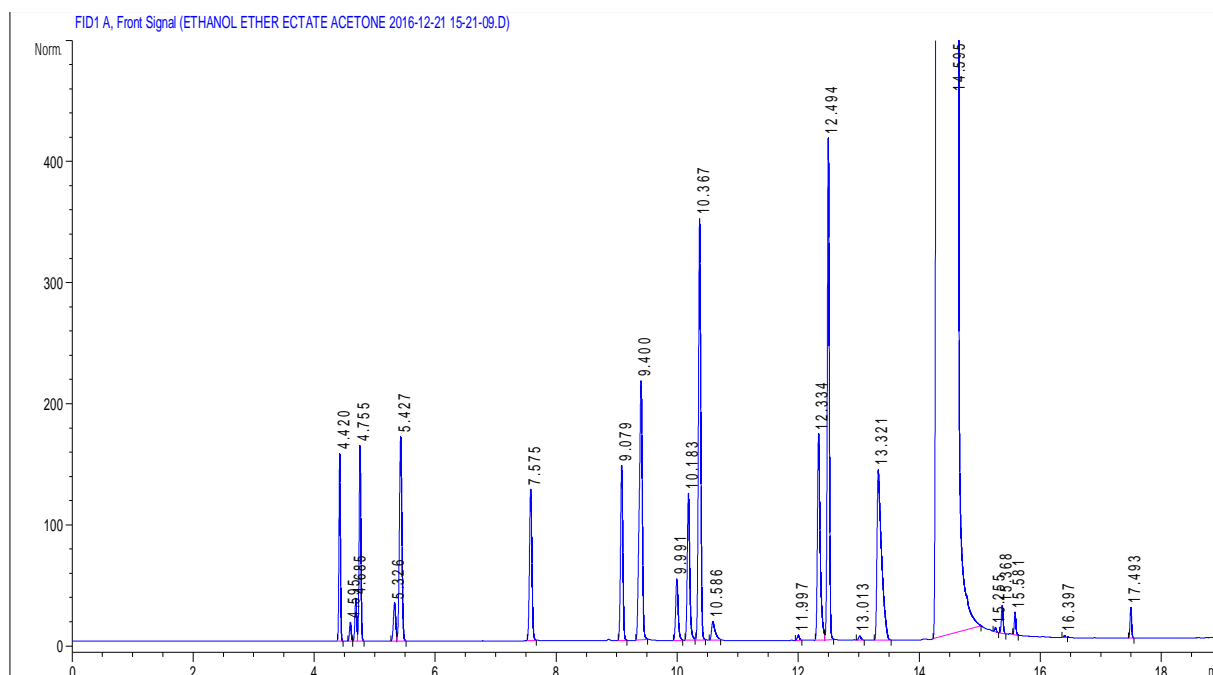


Table 1. Peak identification of analysis in Figure 1

Peak#	Compound	Retention Time	Resolution
1	Pentane	4.420	
2	Hexane	4.685	
3	Tert-butyl methyl ether (MTBE)	4.755	2.18
4	Acetone	5.427	
5	Ethyl acetate	7.575	
6	2-Butanone	9.079	
7	Methanol	9.400	
8	Isopropanol	9.991	
9	Ethanol	10.183	
10	Benzene	10.367	
11	1-propanol	12.334	
12	Toluene	12.494	3.85
13	Iso-butanol	13.321	
14	1-Butanol	14.595	

The good peak shapes are achieved using the GsBP-I nowax column. But due to the polarity of column phase, the components are not eluted in order of increasing carbon atoms.

Therefore, we used the less polar column GsBP-624 for further separation. The instrumentation condition in this analysis is recorded as follows,

GC: Agilent 7890 w/ FID

Column: GsBP-624

Dimensions: 60 meter x 0.32 mm x 1.8  $\mu$ m

Oven Program: 40 °C for 10 min 10 °C/min to 260 °C for 1min

Carrier Gas: Hydrogen @ 2.3 mL/min (Constant Flow)

Injection: Split flow 50ml/min @ 240 °C, 0.1  $\mu$ L

Detector: FID @ 260 °C

Figure 2. Analysis of Oxygenates and Aromatics in 1-butanol using GsBP-624 GC column

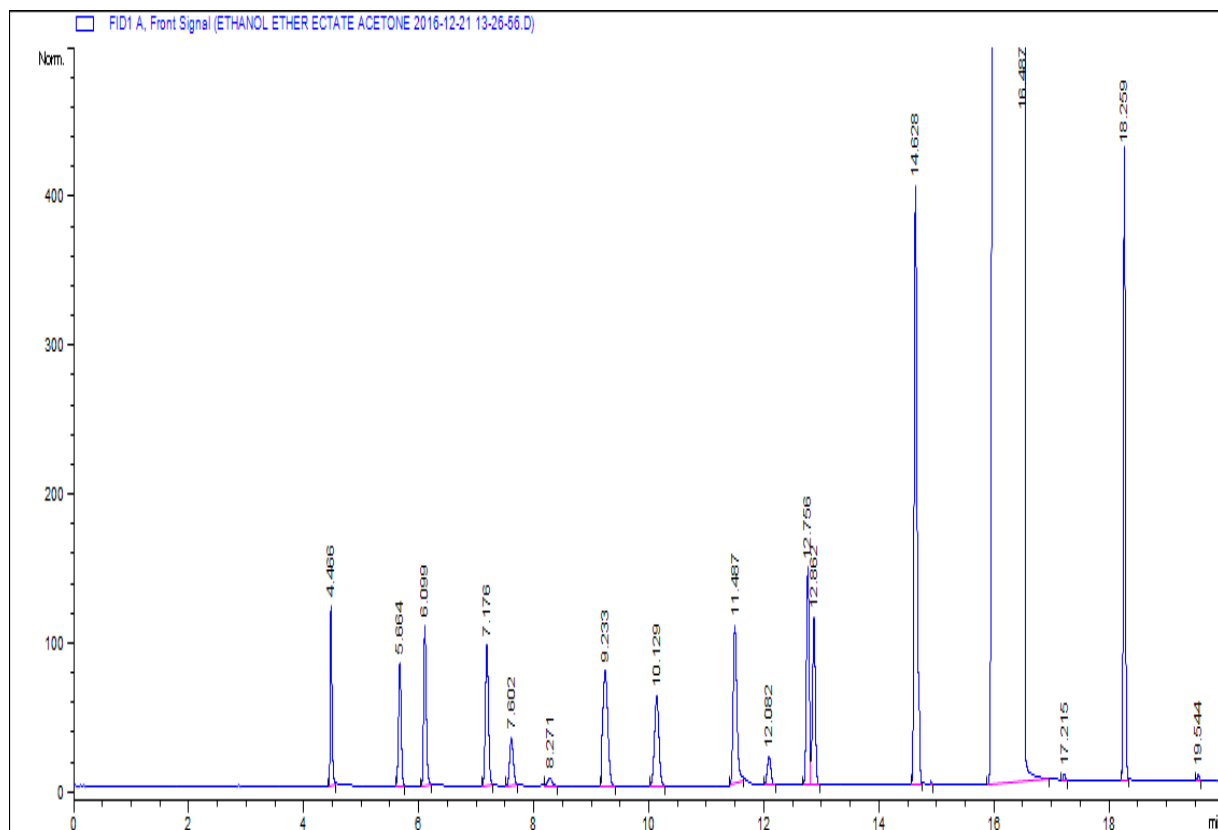


Table 2. Peak identification of analysis in Figure 2

Peak#	Compound	Retention Time	Resolution
1	Methanol	4.466	
2	Pentane	5.664	
3	Ethanol	6.099	
4	Acetone	7.176	
5	Isopropanol	7.602	
6	Tert-butanol	8.271	
7	Tert-butyl methyl ether (MTBE)	9.233	
8	Hexane	10.129	
9	1-Propanol	11.487	
10	2-Butanone	12.082	
11	Ethyl acetate	12.756	
12	2-Methyl-1-propanol	12.862	1.972
13	Benzene	14.628	
14	1-butanol	16.487	
15	Toluene	18.259	

The components are eluted in order of increasing carbon atoms with high resolution and good peak shapes using the GsBP-624 column. 1-butanol is the main component in this application and eluted between benzene and Toluene, which does not interfere with the oxygenate separation.

THANKS for your interest in our products.

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