

Introduction

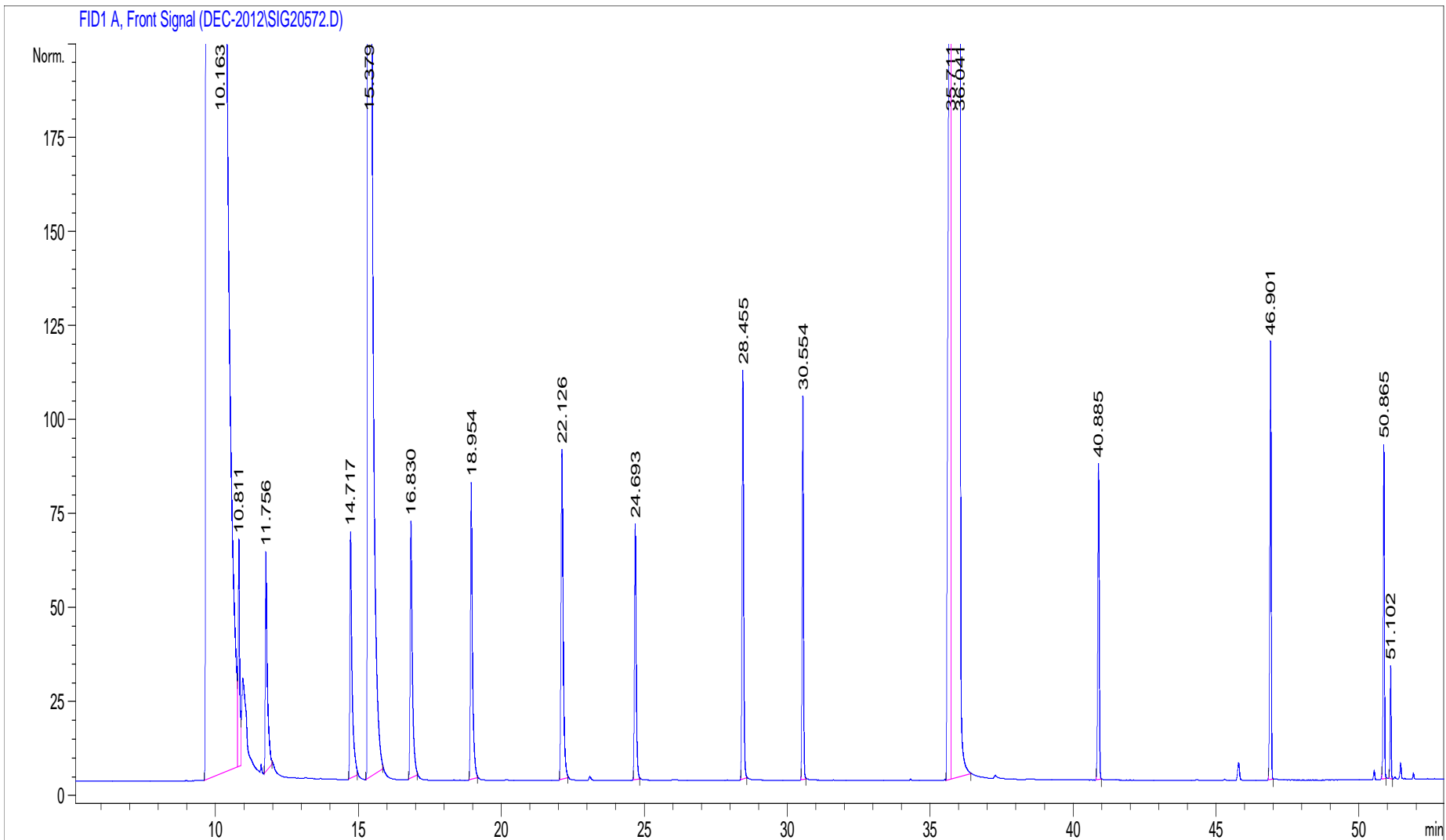
The ASTM D 6730 method describes a GC method for the detailed hydrocarbon analysis (DHA) of gasolines. The method is also applicable to mixtures containing oxygenate blends (MTBE, ETBE, ethanol and so forth) with boiling ranges up to 225 °C in the concentration range from 0.01 to 30 mass%. Some interfering co-elution may occur, especially when higher amounts of olefins are present in the sample.

Here, as a reference, we showed the separation of some C1-C13 hydrocarbons in methanol/ethanol, included in ASTM D6730 to prove that our column could be used in such application. However, to achieve a higher resolution, the use of a connected of tuning column is recommended.

Instrumentation Conditions

- GC: Agilent 7890 w/ FID
- Cat no: *9006-Pona 100m x 0.25mm x 0.5um*
- Oven: 40 °C (8min) 10 °C /min 90 °C (10min) 5 °C /min 150 °C (10min) 10 °C /min 220 °C (1min)
- Carrier: Hydrogen, column flow 0.9ml/min
- Inlet: Split, 250 °C, split flow 60ml/min
- Detector: FID 325 °C
- Samples: C5-C13 hydrocarbons in methanol

FID1 A, Front Signal (DEC-2012\SIG20572.D)



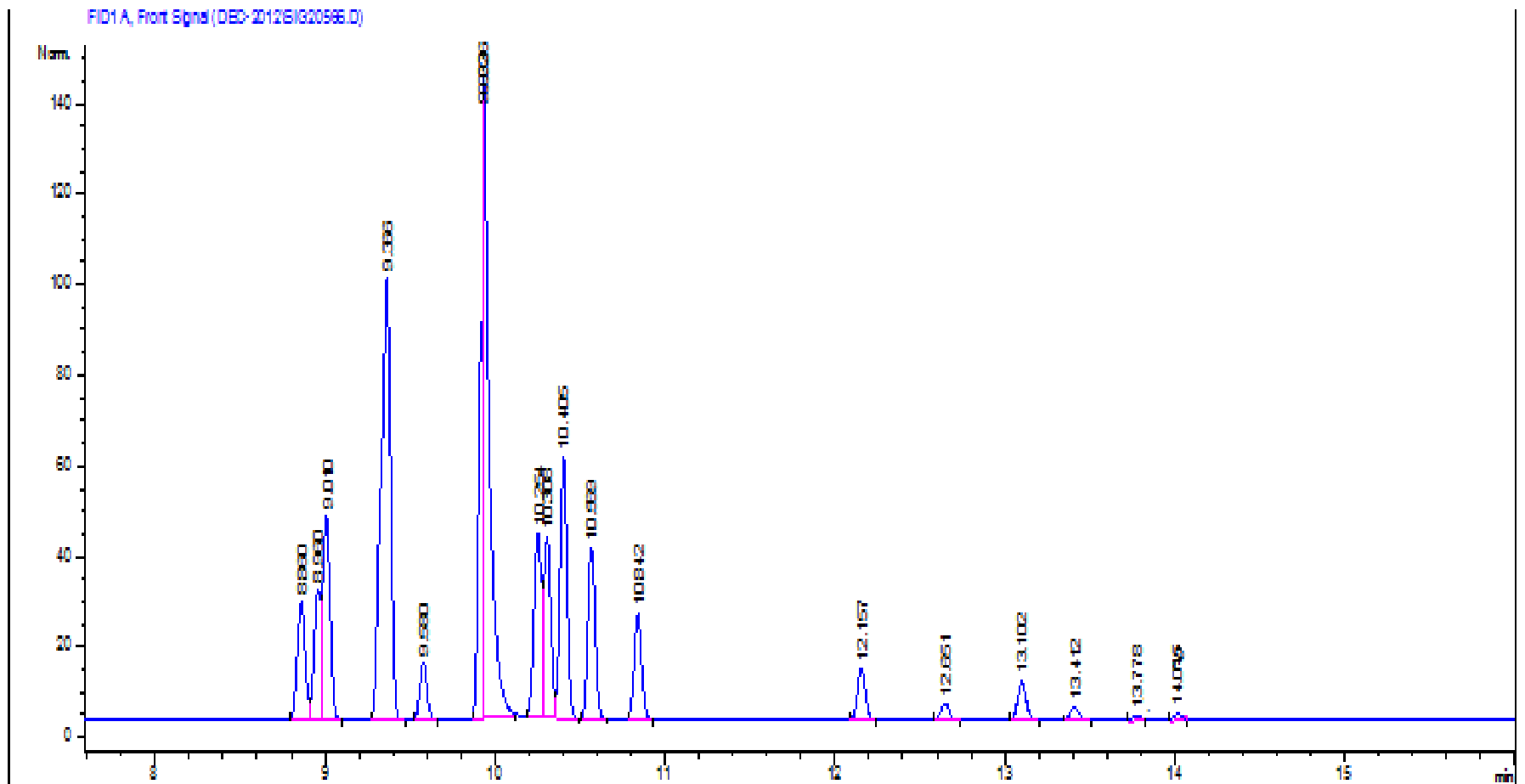
Peak Identifications and Resolutions

Peak #	Compound	Concentration(% in ethanol)	Retention Time	Resolution
1	Ethanol	0.250	10.977	3.79
2	Pentane	0.020	11.682	
3	Hexane	0.020	14.738	
4	2-butanol*	N/A	15.427	
5	Benzene	0.020	15.427	0.00
6	Heptane	0.020	16.856	
7	Toluene	0.020	18.974	
8	Octane	0.020	22.147	
9	P-xylene	0.020	24.704	
10	Nonane	0.020	28.464	
11	Decane	0.020	30.559	
12	Undecane	0.020	35.710	
13	unknown*	N/A	36.168	2.64
14	Dodecane	0.020	40.889	
15	Tridecane	0.020	46.903	
16	Naphthalene	0.020	50.860	
17	1-Methylnaphthalene	0.010	51.100	5.64

* the compounds are the impurities in ethanol and co-eluted with components in ASTM-D-6730.

Instrumentation Conditions

- GC: Agilent 7890 w/ FID
- Cat no: *9006-Pona 100m x 0.25mm x 0.5um*
- Oven: 35 °C
- Carrier: Hydrogen, column flow 0.9ml/min
- Inlet: Split, 250 °C, split flow 60ml/min
- Detector: FID 325 °C
- Samples : C1-C6 in methanol

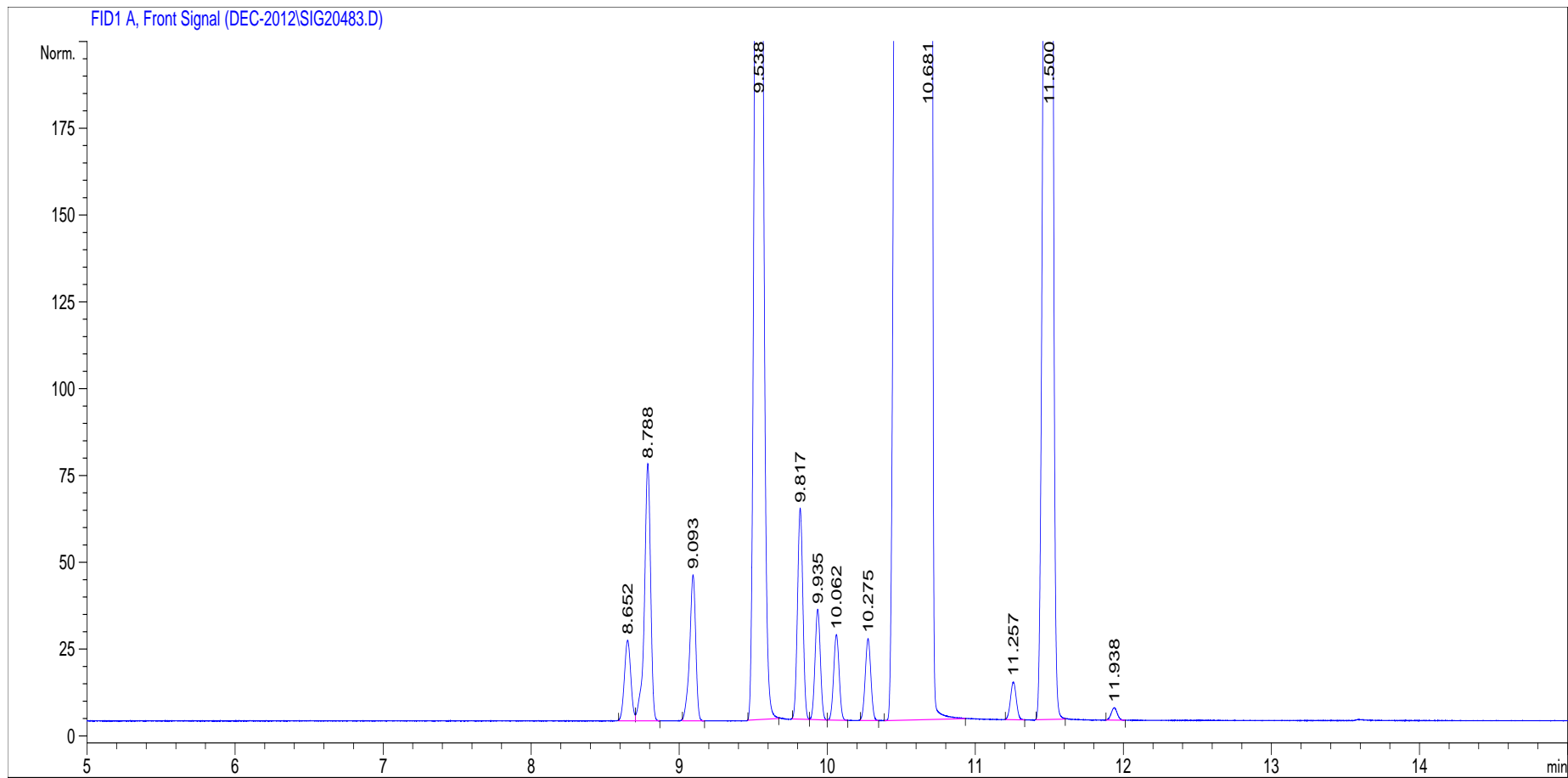


Peak Identifications and Resolutions

Peak #	Compound	Retention Time	Resolution
1	Methane	8.860	
2	Ethylene/acetylene	8.960	2.24
3	Ethane	9.010	1.16
4	Propane/propylene	9.366	
5	Propadiene	9.580	
6	Iso-Butane	9.932	
7	Methnol	9.937	0.14
8	N-Butane	10.254	
9	1-Butene	10.308	1.21
10	Trans-2-Butene	10.405	2.19
11	Iso-Butylene	10.569	3.61
12	Cis-2-Butene	10.842	2.24
13	Iso-Pentane	12.157	1.16
14	N-Pentane	12.651	
15	Pentene-1/Trans-2-Pentene	13.102	
16	2-Methyl-2-butene	13.412	
17	Cis-2-Pentene	13.778	0.14
18	N-Hexane	14.076	

Instrumentation Conditions

- GC: Agilent 7890 w/ FID
- Cat no: *9006-Pona 100m x 0.25mm x 0.5um*
- Oven: 38 °C
- Carrier: Hydrogen, column flow 0.9ml/min
- Inlet: Split, 250 °C, split flow 60ml/min
- Detector: FID 325 °C
- Sample: hydrocarbons #2 in methanol



Peak Identifications and Resolutions

Peak #	Compound	Retention Time	Resolution
1	Methane	8.652	
2	Ethane	8.788	
3	Propane	9.093	
4	Methnol	9.538	
5	N-Butane	9.817	
6	1-Butene	9.935	
7	Trans-2-butene	10.062	
8	Cis-2-butene	10.275	
9	Eethanol	10.681	
10	Isopentane	11.257	
11	Isopropyl alcohol	11.500	
12	N-pentane	11.938	