

Application Data Sheet

No. 7

System Gas Chromatograph

Fast Refinery Gas Analyzer Nexis GC-2030FRGA1 GC-2014FRGA1

This method is for determining the chemical composition of natural gases and similar gaseous mixtures within the composition range shown in the specification sheet. It provides data for calculating a sample's physical properties, such as its heating value and relative density, or for monitoring the concentrations of one or more of the components in a mixture. The system uses a total of four valves and eight columns. The sample is introduced into four sample loops for determination. Using a pre-column, C6+ components are back-flushed as a single peak. The valve timing then allows the hydrocarbons C3 through/to C5 to be separated individually using an Alumina capillary column and detected by FID. Finally, using MS-5A, O₂, N₂, CH₄, and CO are separated. simultaneously, CO₂, C₂, and H₂S are separated with an Rtx-Q plot column and detected by the TCD. H₂ will be separated by MS-5A and, with the other components vented out, detected by another TCD using N₂ as carrier gas. The final analysis time is approximately 10 minutes. The system includes Lab Solutions GC workstation software and BTU and Specific Gravity calculation software.

Analyzer Information

System Configuration:

Four valves / eight capillary and packed columns with two TCD / one FID detectors

Sample Information:

He, H₂, O₂, N₂, CO, CO₂, H₂S, C₁-C₅, C₆₊

*COS can be analyzed as an option.

Methods met:

ASTM-D1945, D3588, GPA-2261

Concentration Range:

No.	Name of Compound	Concentration Range	
		Low Conc.	High Conc.
1	He	0.010%	10.0%
2	H ₂	0.010%	10.0%
3	O ₂	0.010%	20.0%
4	N ₂	0.010%	50.0%
5	CH ₄	0.010%	80.0%
6	CO	0.010%	5.0%
7	CO ₂	0.010%	20.0%
8	C ₂ H ₄	0.010%	10.0%
9	C ₂ H ₆	0.010%	10.0%
10	C ₂ H ₂	0.010%	10.0%
11	H ₂ S	0.050%	30.0%
12	C ₃ H ₈	0.001%	5.0%
13	C ₃ H ₆	0.001%	5.0%
14	i-C ₄ H ₁₀	0.001%	1.0%
15	n-C ₄ H ₁₀	0.001%	1.0%
16	Other Hydrocarbons	0.001%	1.0%
17	C ₆₊	0.001%	1.0%

Detection limits may vary depending on the sample.
Please contact us for more consultation.

System Features

- Less than 10 minutes analysis for refinery gas
- Dual TCD, FID channels for simultaneous analysis
- Calorific value software is available
- Good separation for H₂ and He, and full range capability for H₂

Typical Chromatograms

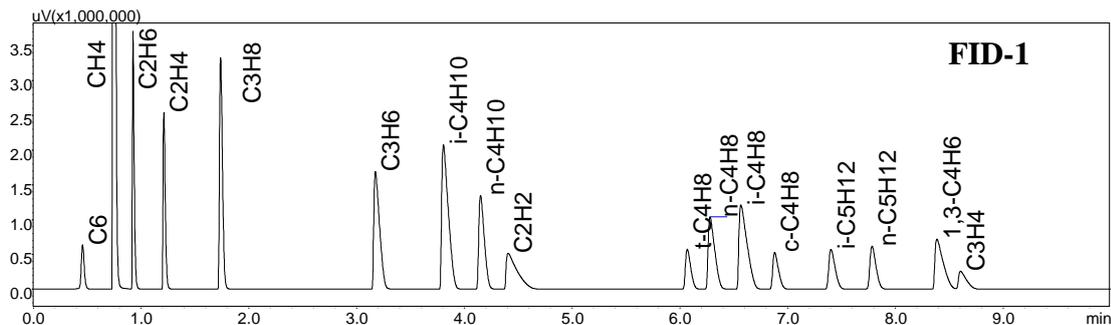


Fig. 1 Chromatogram of FID-1

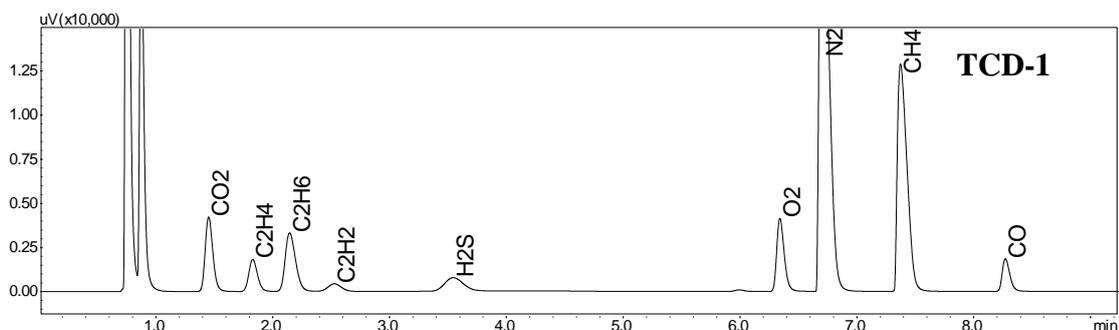


Fig. 2 Chromatogram of TCD-1

*COS is eluted after CO.

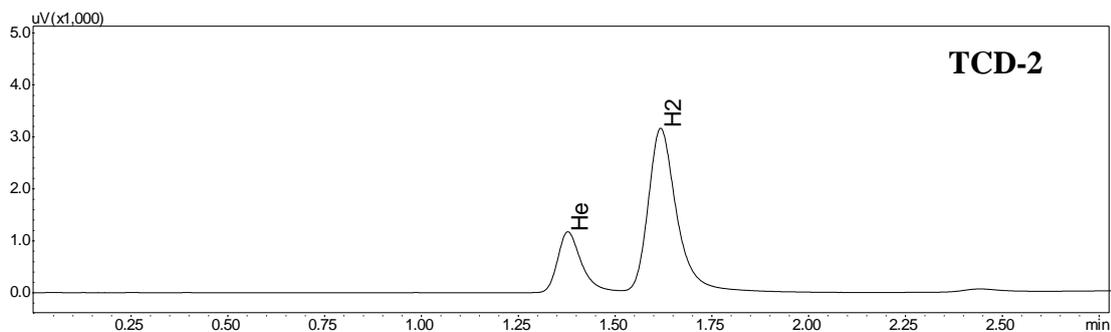


Fig. 3 Chromatogram of TCD-2