

Application Data Sheet

No. 79

System Gas Chromatograph

Gaseous Hydrocarbons Mixture Obtained from Refining Processes

Nexis GC-2030RGA2 GC-2014RGA2

This instrument is designed to determine the chemical composition of natural gases and similar gaseous mixtures within the composition range shown in the specification sheet. This test method provides data for calculating physical properties of the sample, such as heating value and relative density, or for monitoring the concentrations of one or more of the components in a mixture. A total of 4 valves and 6 columns are used in this GC system. Four sample loops are filled and actuate simultaneously. 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 by Shimalite-Q and Sebaconitrile columns and detected by TCD-3. A MS-13X, which is used to separate O₂, N₂, CH₄, CO. CO₂ and the C₂ compounds are separated by a Sunpak S column and detected by TCD-1. H₂ will be separated by a MS-5A and detected by TCD-2 using N₂ as carrier gas. The final analysis time is approximately 40 minutes. The system includes LabSolutions workstation software and BTU and Specific Gravity calculation software.

Analyzer Information

System Configuration:

Four valves / nine packed columns with three TCD detectors

Sample Information:

H₂, O₂, N₂, Ar, CO, CO₂, C₁-C₅, C₆₊

Methods met:

ASTM-D2163

Concentration Range:

No.	Name of Compound	Concentration Range		Detector
		Low Conc.	High Conc.	
1	H ₂	0.05%	100.00%	TCD-2
2	Ar+O ₂	0.05%	10.00%	TCD-1
3	N ₂	0.05%	100.00%	TCD-1
4	CH ₄	0.05%	50.00%	TCD-1
5	CO	0.05%	20.00%	TCD-1
6	CO ₂	0.05%	20.00%	TCD-1
7	C ₂ H ₆	0.05%	15.00%	TCD-1
8	H ₂ S	0.05%	5.00%	TCD-1
9	C ₂ H ₄	0.05%	20.00%	TCD-1
10	C ₃ H ₈	0.05%	50.00%	TCD-3
11	C ₃ H ₆	0.05%	100.00%	TCD-3
12	i-C ₄ H ₁₀	0.05%	30.00%	TCD-3
13	n-C ₄ H ₁₀	0.05%	30.00%	TCD-3
14	trans-2-C ₄ H ₈	0.05%	10.00%	TCD-3
15	cis-2-C ₄ H ₈	0.05%	10.00%	TCD-3
16	1-C ₄ H ₈	0.05%	10.00%	TCD-3
17	i-C ₄ H ₈	0.05%	10.00%	TCD-3
18	i-C ₅ H ₁₂	0.05%	2.00%	TCD-3
19	n-C ₅ H ₁₂	0.05%	2.00%	TCD-3
20	1,3-C ₄ H ₆	0.05%	2.00%	TCD-3
21	C ₆ plus	0.05%	10.00%	TCD-3

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

System Features

- Calorific value software is available
- 40 minutes analysis for natural gases analysis can be carried out
- Three TCD channels
- Good repeatability

Typical Chromatograms

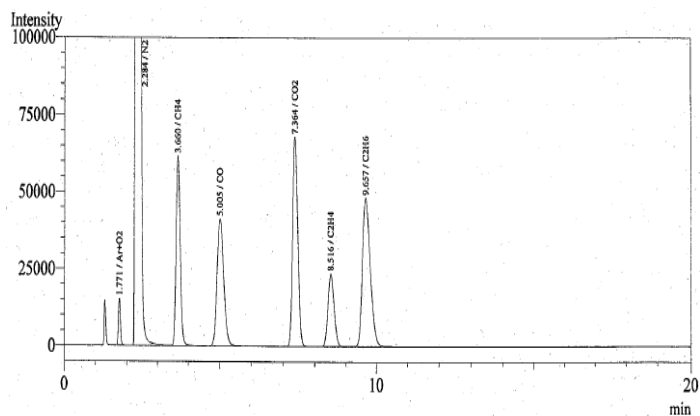


Fig. 1 Chromatogram of TCD-1

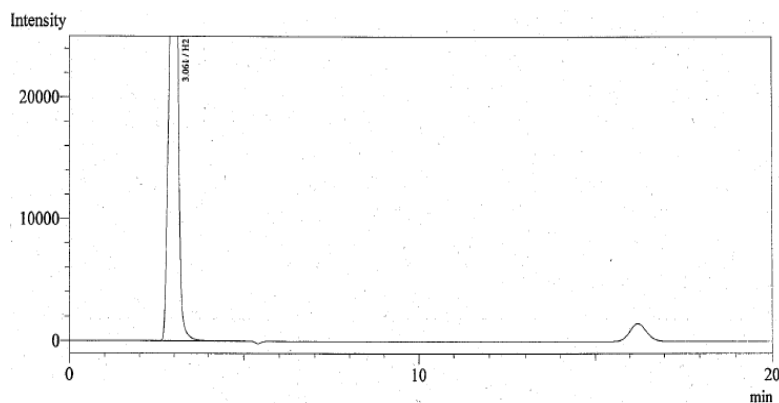


Fig. 2 Chromatogram of TCD-2

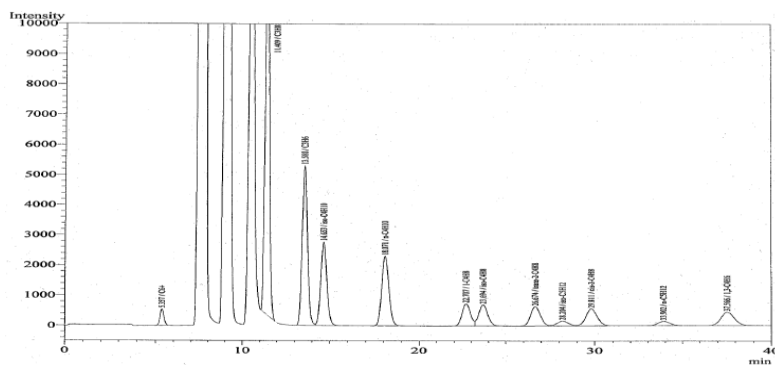


Fig. 3 Chromatogram of TCD-3