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Application Data Sheet

No.43

System Gas Chromatograph

High Speed Refinery Gas Analyzer Nexis GC-2030HSRGA1 GC-2014HSRGA1

This method is for determining the chemical composition of natural gases and similar gaseous mixtures within the composition range shown below. This test method 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. This analyzer 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 through an Alumina capillary column and detected by FID. Finally, using MS-5A, O2, N2, CH4, and CO are separated. At the same time, CO2, C2, and H2S are separated using an Rtx-Q plot column and detected by a 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 six minutes. The system includes LabSolution 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, H_2, O_2, N_2, CO, CO_2, H_2S, C_1-C_5 , C_{6+}

Methods met:
ASTM-D1945, D1946, D3588, GPA-2261

Concentration Range:

No.	Name of Compound	Concentration Range	
		Low Conc.	High Conc.
1	He	0.01%	10.0%
2	H2	0.01%	80.0%
3	O2	0.01%	50.0%
4	N2	0.01%	50.0%
5	CH4	0.01%	80.0%
6	CO	0.01%	10.0%
7	CO2	0.01%	30.0%
8	C2H4	0.01%	10.0%
9	C2H6	0.01%	10.0%
10	C2H2	0.01%	10.0%
11	H2S	0.05%	30.0%
13	C3H8	0.01%	5.0%
14	C3H6	0.01%	5.0%
15	i-C4H10	0.01%	1.0%
16	n-C4H10	0.01%	1.0%
17	C3H4	0.01%	1.0%
18	C2H2	0.01%	1.0%
19	Other Hydrocarbons	0.01%	0.5%
20	C6 plus	0.01%	0.5%

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

System Features

- Less than 6 minutes analysis for refinery gases analysis with H2S can be carried out
- Dual TCD with FID channels for simultaneous analysis
- By using split/splitless injector, liquid hydrocarbons can be analyzed by the FID
- Good separation for H2 and He, and full range capability for H2

Typical Chromatograms

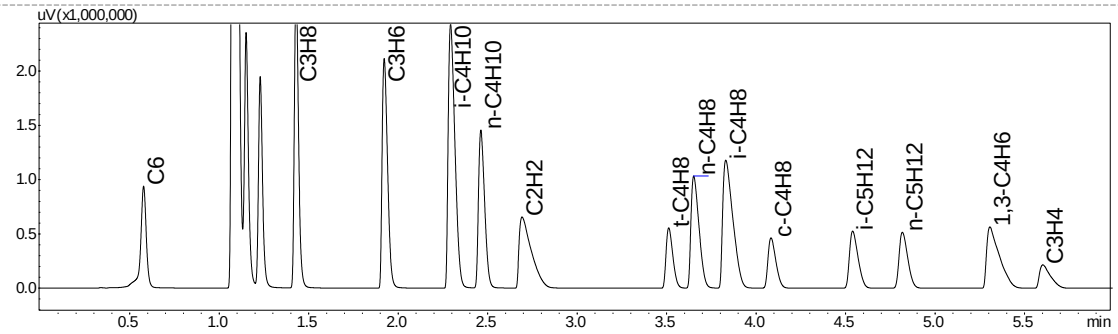

Fig. 1 Chromatogram of FID-1

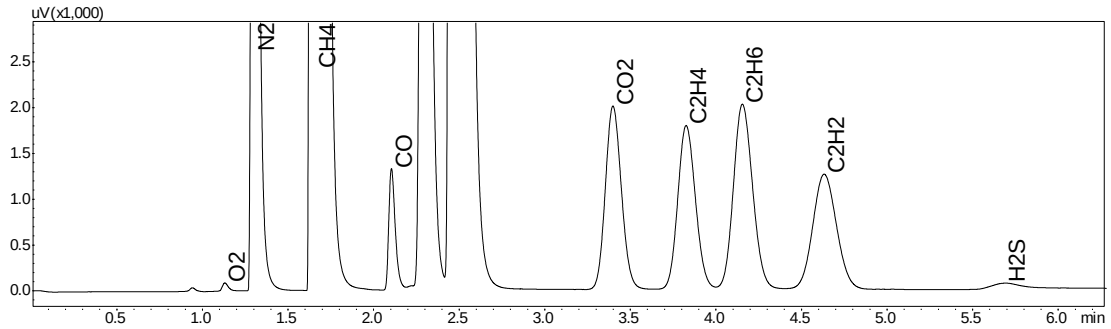

Fig. 2 Chromatogram of TCD-1

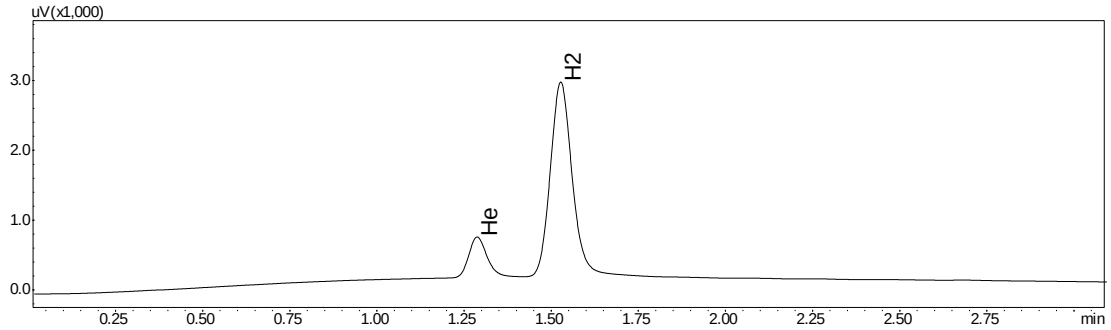

Fig. 3 Chromatogram of TCD-2

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