SHIMADZU
Excellence in Science

Application Data Sheet

No.120

System Gas Chromatograph

Fast NGA System with He/H2 Analysis
Nexis GC-2030 FRGA-II1
GC-2014 FRGA-II1

This GC system is designed for determining 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 5 valves and 8 columns are used in this GC system. Sample is loaded into three 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 by an Alumina capillary column and to be detected by FID. Using a P-N column , Air+CO+CH4 elute as a mixed peak to packed column MS-5A, then separated, switching the valve, CO2, C2, H2S elute to a P-Q column then separated. These components are detected by TCD. H2 will be separated by an MS-5A. The other components are vented out and 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:
Five valves / seven packed column and one capillary with two TCD detectors and one FID detector

Concentration Range:

Sample Information:
Permanent gas ,C1-C6
Methods met:
ASTM-D1945, D3588, GPA-2261

No.	Name of Compound	Concentration Range		Detector
		Low Conc.	High Conc.	
1	He	0.010%	10.0%	TCD-2
2	H2	0.010%	10.0%	TCD-2
3	O2	0.010%	20.0%	TCD-1
4	N2	0.010%	50.0%	TCD-1
5	CH4	0.010%	80.0%	TCD-1
6	CO	0.010%	5.0%	TCD-1
7	CO2	0.010%	20.0%	TCD-1
8	C2H4	0.010%	10.0%	TCD-1
9	C2H6	0.010%	10.0%	TCD-1
10	C2H2	0.010%	10.0%	TCD-1
11	H2S	0.050%	30.0%	TCD-1
12	C3H8	0.001%	5.0%	FID
13	C3H6	0.001%	5.0%	FID
14	i-C4H10	0.001%	1.0%	FID
15	n-C4H10	0.001%	1.0%	FID
16	Propadiene(C3H4)	0.001%	1.0%	FID
17	Trans-C4H8	0.001%	0.5%	FID
18	1-C4H8	0.001%	0.5%	FID
19	i-C4H8	0.001%	0.5%	FID
20	Cis-2-C4H8	0.001%	0.5%	FID
21	i-C5H12	0.001%	0.5%	FID
22	n-C5H12	0.001%	0.5%	FID
23	1,3-C4H6	0.001%	0.5%	FID
24	C3H4	0.001%	0.5%	FID
25	C6+	0.001%	1.0%	FID

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

System Features

・Two TCD channels and one FID channels
・Calorific value software is available
・Good repeatability
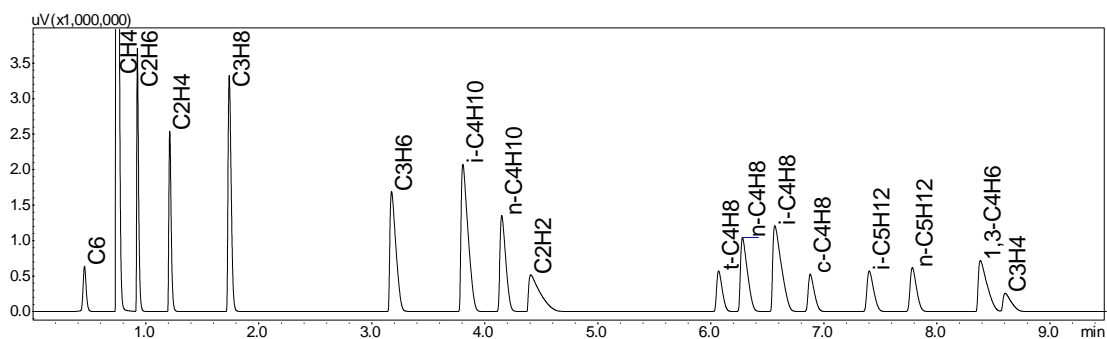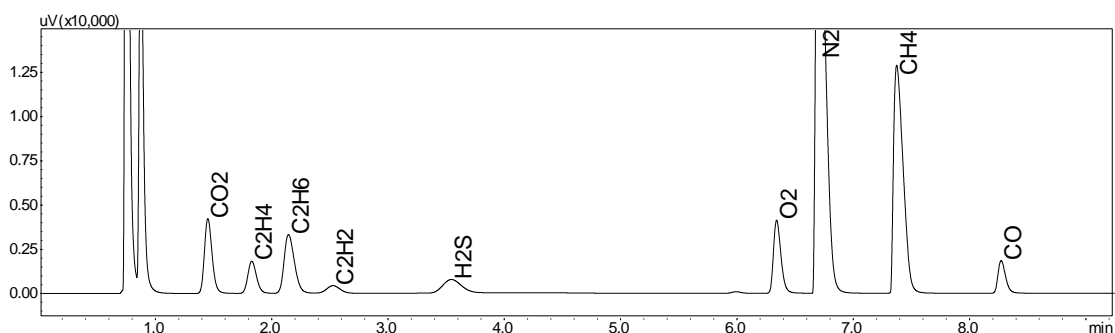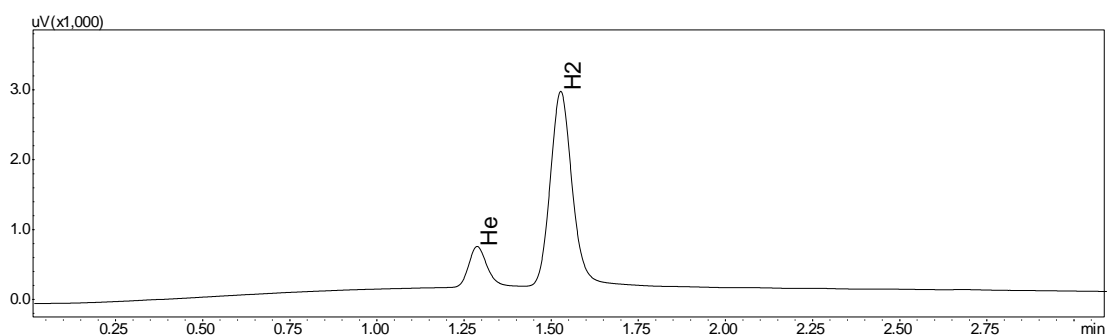
Typical Chromatograms

Fig.1 Chromatogram of FID

Fig.2 Chromatogram of TCD-1

Fig.3 Chromatogram of TCD-2

First Edition: November, 2017

![SHIMADZU]

Shimadzu Corporation

www.shimadzu.com/an/