SHIMADZU
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Application Data Sheet

No. 1

System Gas Chromatograph

Natural Gas Analyzer
Nexis GC-2030NGA1
GC-2014NGA1

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 GC system uses a total of three valves and six columns. The sample is introduced into three sample loops for determination. Using a pre-column, C6+ components are back-flushed as a single peak. The valve timing then allows C3-C5, CO2, and C2H6 to be eluted to a TCD through a DC-200 column in that order. Finally, using MS-5A, O2, N2, CH4, and CO are separated and detected by the TCD, while He and H2 will be separated by MS-5A and, with the other compounds vented out, detected by a second TCD using N2 as carrier gas. The final analysis time is approximately 20 minutes. The system includes LabSolutions GC workstation software and BTU and Specific Gravity calculation software.

Analyzer Information

System Configuration:
Three valves / six packed columns with two TCD detectors

Sample Information:
He, H_2, O_2, N_2, CO, CO_2, H_2S, C_1-C_5 (methane, ethane, propane, iso-butane, n-butane, iso-pentane, and n-pentane), C_{6+} by backflush

Methods met:
ASTM-D1945, 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%	10.0%
3	O2	0.01%	20.0%
4	N2	0.01%	50.0%
5	CH4	20.0%	100%
6	CO	0.01%	5.0%
7	CO2	0.01%	20.0%
8	C2H6	0.01%	10.0%
9	C3H8	0.01%	10.0%
10	i-C4H10	0.01%	10.0%
11	n-C4H10	0.01%	2.0%
12	i-C5H12	0.01%	10.0%
13	n-C5H12	0.01%	2.0%
14	H2S	0.10%	30.0%
15	C6+	0.01%	0.5%

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

System Features

- 23 minutes analysis for natural gas
- Dual TCD channels
- Calorific value software is available
- Good separation for He and H_2
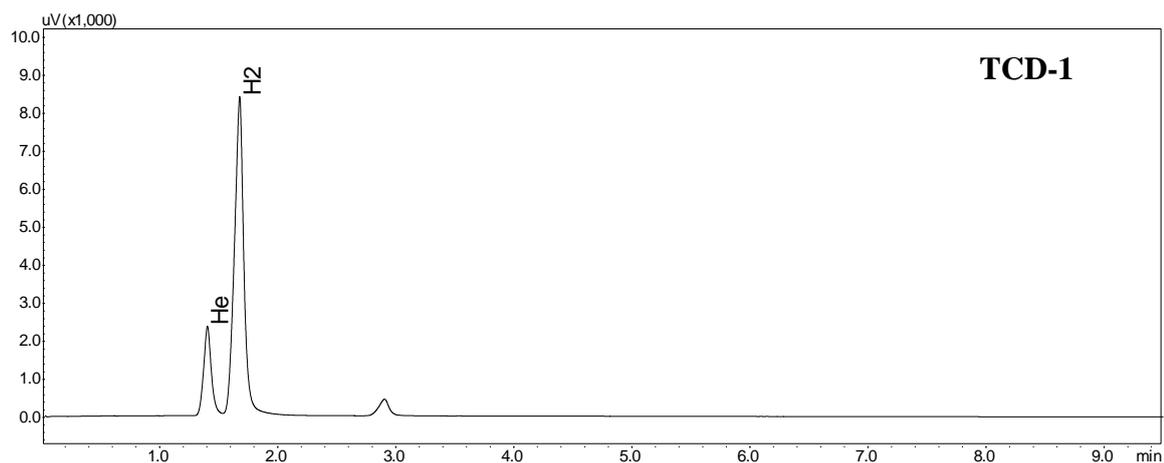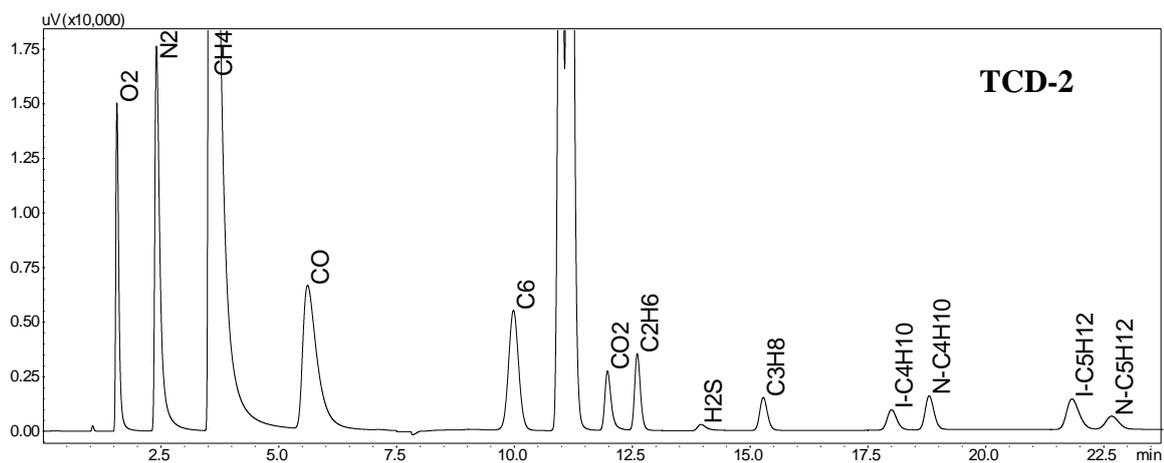- Good repeatability

Typical Chromatograms

Fig. 1 Chromatogram of TCD-1

Fig. 2 Chromatogram of TCD-2

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