

# Application Data Sheet

## No. 34

## System Gas Chromatograph

### TOGAS Analysis System with manual sampling Nexis GC-2030TOGAS3 GC-2014TOGAS3

A simple and efficient method based on the technique of manual sampling and valve switching is developed for the analysis of TOGAS. The sample is directed into main-column-1 (P-N) through headspace, and separated in groups. The permanent gas and CH<sub>4</sub> are directed into main-column-2 (MS-13X) through 2-1. H<sub>2</sub>, CH<sub>4</sub>, and CO are detected by PDHID, and O<sub>2</sub>, N<sub>2</sub> are detected by TCD with additional valve switching. CO<sub>2</sub> reduced into CH<sub>4</sub> by a methanizer is detected by FID. Valve switching occurs before the CO<sub>2</sub> is directed into main-column-2. The other hydrocarbons and CO<sub>2</sub> are directed into main-column-3 (P-T) through 6-5. They are detected by FID. After the detection of C<sub>4</sub>H<sub>10</sub>, the valve is immediately backed to its original position to wait for the next analysis. A headspace injector can be connected to configure TOGAS analysis with a headspace device. The system includes LabSolutions GC workstation software.

#### Analyzer Information

##### System Configuration:

Three valves / four packed columns / TCD / PDHID/ Methanizer with FID

##### Sample Information:

H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, CO, CO<sub>2</sub>, C<sub>2</sub> in transformer oil

##### Methods met:

ASTM-D3612C

##### Concentration Range:

No.	Name of Compound	Concentration Range	
		Low Conc.	High Conc.
1	H <sub>2</sub>	0.1ppm	500ppm
2	O <sub>2</sub>	50.0ppm	50000ppm
3	N <sub>2</sub>	50.0ppm	50000ppm
4	CH <sub>4</sub>	0.1ppm	500ppm
5	CO	0.1ppm	500ppm
6	CO <sub>2</sub>	1.0ppm	1000ppm
7	C <sub>2</sub> H <sub>6</sub>	0.1ppm	10000ppm
8	C <sub>2</sub> H <sub>4</sub>	0.1ppm	10000ppm
9	C <sub>2</sub> H <sub>2</sub>	0.1ppm	10000ppm
10	C <sub>3</sub> H <sub>8</sub>	0.2ppm	10000ppm
11	C <sub>3</sub> H <sub>6</sub>	0.2ppm	10000ppm
12	i-C <sub>4</sub> H <sub>10</sub>	1.0ppm	10000ppm

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

#### System Features

- Single channel with packed columns
- Manual sampling and valve switching with optional head space
- 16 minute analysis time
- Trace level of CO and CO<sub>2</sub> are deoxidized into CH<sub>4</sub> by Methanizer and detected by FID

Typical Chromatograms

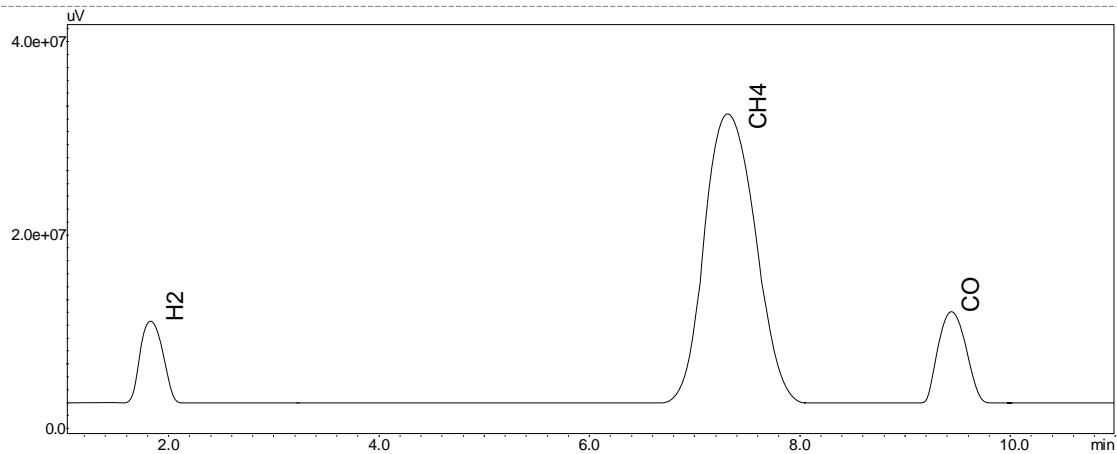


Fig. 1 Chromatogram of PDHID

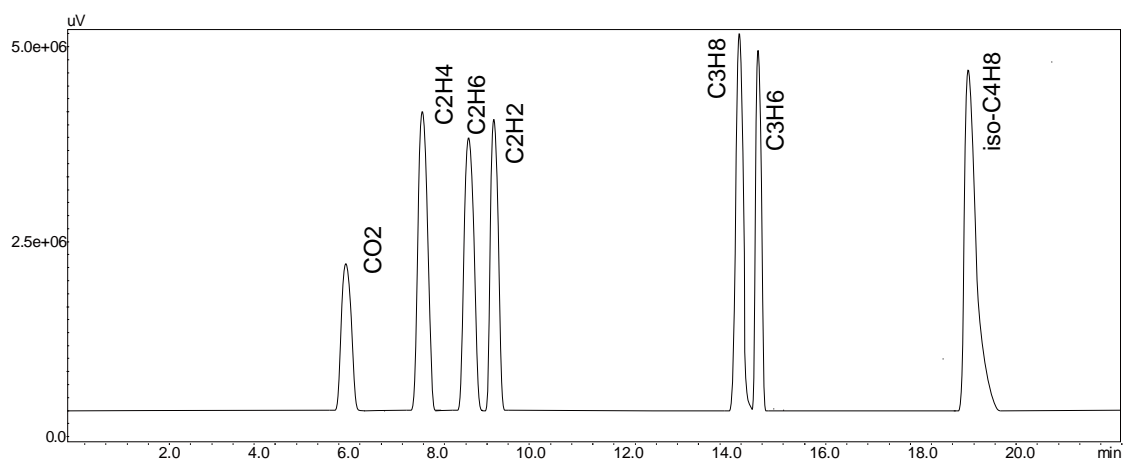


Fig. 2 Chromatogram of FID

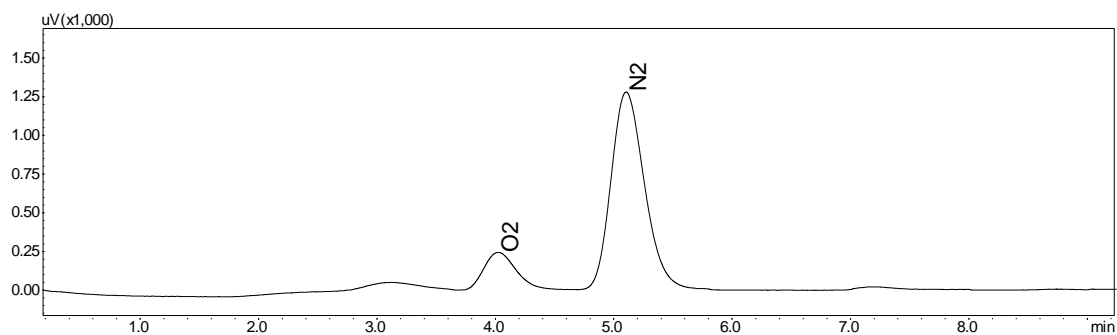


Fig. 3 Chromatogram of TCD

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