

Application Data Sheet

No.57

System Gas Chromatograph

N₂O/CO/CO₂/CH₄ analysis system (TCD/FID) Nexis GC-2030NCCC1 GC-2014NCCC1

This method provides for the determination of Nitrous oxide (N₂O), in atmospheric air, by gas chromatography (GC) with Electron Capture detector (ECD) using Porapak-N and HayeSep-D packed column. A total of 5 valves and 7 columns are used in this GC system. Sample is introduced into two sample loops. The N₂O is separated by the HayeSep-D column and detected by ECD.

The second channel can be used for permanent gas O₂, N₂, CH₄, CO and CO₂ analysis with TCD, also can be used for trace CH₄, CO and CO₂ analysis with FID. Since large amount of O₂ gas affects life time of methanizer catalyst, O₂ gas needs to be removed by additional 6 port valve.

Method-1: A Porapak-N pre column is used to backflush the C₂ compounds. A Porapak-N functions to separate Air/CH₄/CO from CO₂. The Air/CH₄/CO peak is separated by MS-13X column into the individual components. CO₂ moves through the Porapak-Q and is detected by the TCD.

Method-2: A Porapak-N column pre-column is used to backflush the C₂ compounds. A Porapak N functions to separate CO/CH₄ from CO₂. The CO and CH₄ are separated by MS-13X column. The CO₂ bypasses the Mol Sieve 13X and moves through the Porapak-Q. The separated peaks are directed to a methanizer device. CO and CO₂ are reduced to CH₄ by means of nickel catalyst and detected by flame ionization detector (FID). The system includes Lab Solutions GC workstation software.

Analyzer Information

System Configuration:

Five valves / seven packed columns with one ECD detector and one FID detector

Sample Information:

N₂O, permanent gas

Concentration Range:

No.	Name of Compound	Concentration Range		Detector
		Low Conc.	High Conc.	
1	N ₂ O	50.00ppb	100.00ppm	ECD
2	CH ₄	1.00ppm	100.00ppm	FID
3	CO	1.00ppm	100.00ppm	MTN+FID
4	CO ₂	1.00ppm	100.00ppm	MTN+FID
5	CH ₄	0.01%	10.00%	TCD
6	CO	0.01%	10.00%	TCD
7	CO ₂	0.01%	10.00%	TCD
8	N ₂	0.01%	20.00%	TCD
9	O ₂	0.01%	20.00%	TCD

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

System Features

- Versatile software easy GC system operation
- One ECD and one FID channel
- Good repeatability

Typical Chromatograms

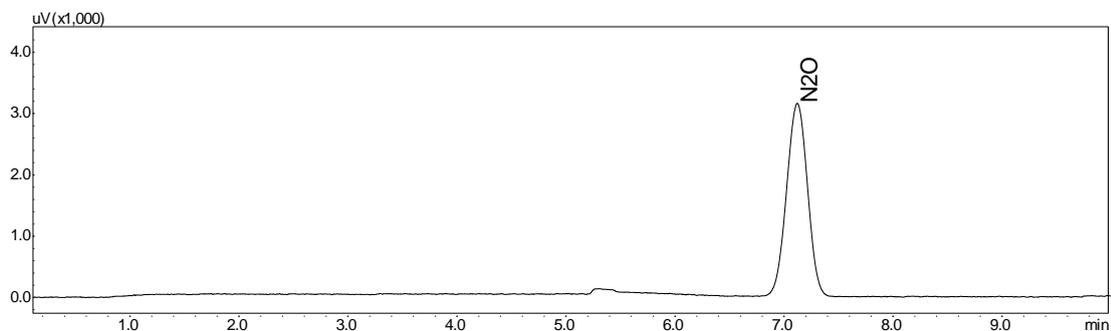


Fig. 1 Chromatogram of ECD

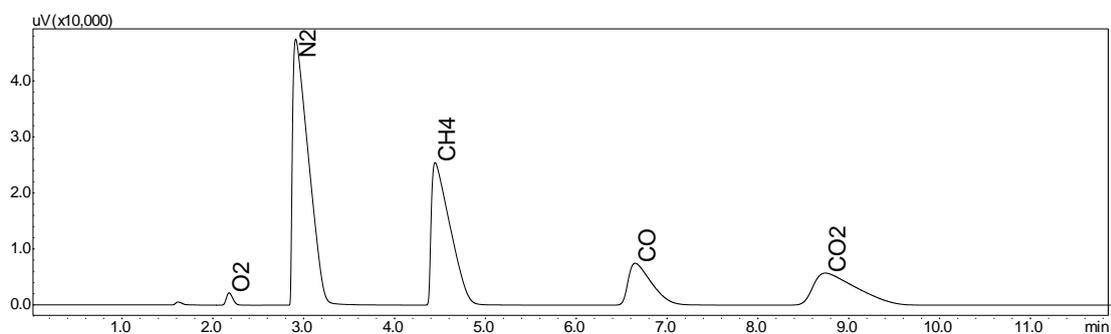


Fig. 2 Chromatogram of TCD

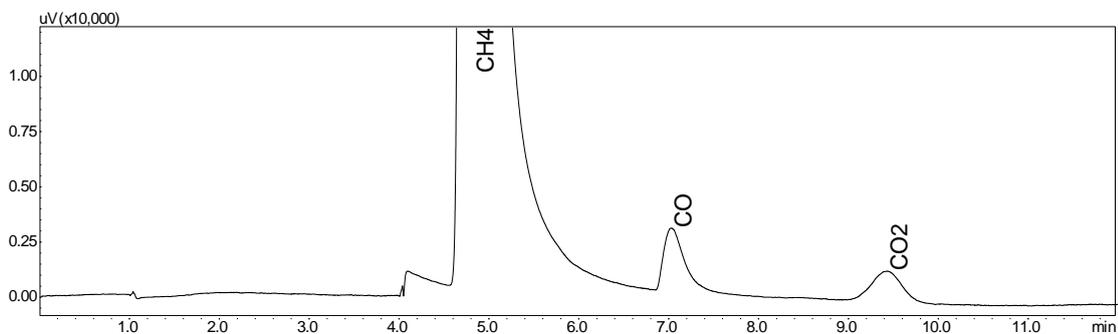


Fig. 3 Chromatogram of FID

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