Agilent 490 Micro GC Biogas Analyzers

Data Sheet

Key benefits

- **Complete Solution**
  The Agilent 490 Micro GC Biogas Analyzers are shipped as a total solution. The analyzers are factory tuned and come with final test data, analytical method parameters, analyzer user manual and a check-out sample.
- **Optimized Configuration**
  The Biogas Analyzers provide the results and ruggedness you demand in the laboratory or in the field for the analysis of biogas and related sample streams. Agilent provides a single part number Biogas and Extended Biogas Analyzer depending on the nature of the sample.
- **Ready-to-Go**
  Start-up is easy; the analyzer ships fully loaded with a method and is ready-to-go upon installation.
- **Easy to Operate**
  Agilent's 490 Micro GC is designed to achieve the best possible results. In addition, this system does not require a high degree of operator skills to be used successfully.
- **The Speed You Need**
  Micro GC is all about fast chromatography. Precise gas analysis in seconds rather than minutes provides improved product quality and more exact product valuation.
- **Fast Delivery**
  The Agilent Biogas Analyzers are shipped from stock ensuring short delivery times.

Introduction

Biogas is produced through biological processes such as anaerobic fermentation or digestion of organic material. The main components of biogas are methane and carbon dioxide, with some other permanent gases, hydrogen and hydrogen sulfide. The exact composition of the biogas is related to the origin of the organic material.

Biogas is considered a renewable and sustainable energy source; it can fuel any type of heat engine to generate either mechanical or electrical power. To increase its caloric values, it is sometimes necessary to remove some of the carbon dioxide or blend it with other hydrocarbon streams.

The increasing interest in biogas results in a growing demand for fast and efficient analysis technology to determine its composition. That is where the Agilent 490 Micro GC Biogas Analyzers can play a significant role.

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Choose the right Biogas Analyzer for your needs

Depending on the composition of your biogas sample, Agilent has two 490 Micro GC based Biogas Analyzer configurations available.

For pure biogas analysis, including permanent gases and hydrogen sulfide, the Agilent 490 Micro GC Biogas Analyzer is recommended; even ethane and propane can be can be analyzed with this analyzer setup. This Biogas Analyzer consists of a dual channel cabinet including a 10-meter CP-Molsieve 5A with argon as carrier gas, providing excellent sensitivity and linearity for hydrogen, and a 10-meter CP-PoraPLOT U column channel with helium carrier gas.

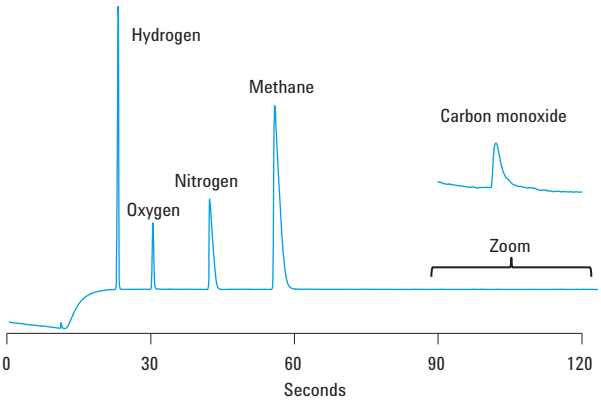
When biogas is mixed with other hydrocarbon streams such as natural gas or liquefied petroleum gas (LPG), the sample contains higher boiling hydrocarbons. To analyze these hydrocarbons, the Agilent 490 Micro GC Biogas Analyzer Extended is the analyzer of choice. This Extended Biogas Analyzer is a quad channel cabinet Micro GC including three column channels; a 10-meter CP-Molsieve column on argon as carrier gas, a 10-meter CP-PoraPLOT U column, and an additional 6-meter CP-Sil 5 CB column on helium as carrier gas.

Both Biogas Analyzers are equipped with heated sample lines and injectors to eliminate any cold spot and prevent possible condensation of moisture, to ensure the integrity of the sample is maintained throughout the sample flow path.

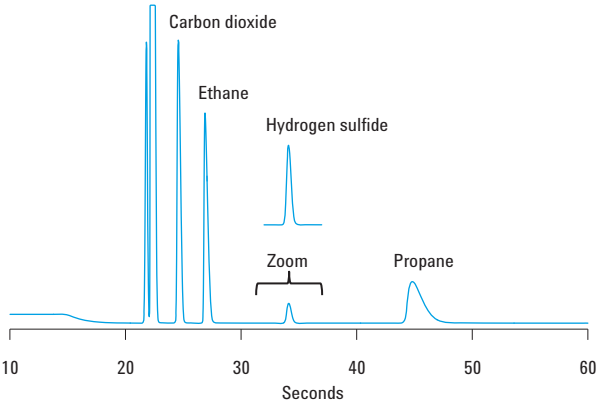
The CP-Molsieve 5A and CP-PoraPLOT U columns are equipped with backflush to vent functionality. For the Molsieve column, this backflush to vent is required to maintain the separation effiency as biogas and related samples may contain larger amounts of carbon dioxide, moisture, and higher boiling hydrocarbons. Moisture and carbon dioxide tend to adsorb quickly to the Molsieve 5A stationary phase and change its chromatographic properties. This would results, over time, in retention shifts and loss of separation. Higher hydrocarbons will eventually elute, but will cause higher detector noise levels and would lead to reduced sensitivity. The backflush to vent functionality on the Molsieve 5A and PoraPLOT U column channel prevents this from happening.

Moreover the CP-Molsieve 5A is equipped with the retention time stability (RTS) option. This RTS option consists of additional in-line filters between the electronic gas control and the column module to ensure moisture and carbon dioxide free carrier gas. Moreover the use of the RTS option enables a more efficient backflush of carbon dioxide. This enhances column lifetime and, most importantly, leads to more stable retention times.

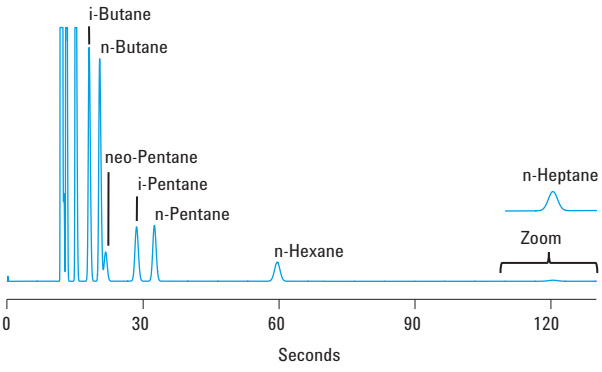
Channel 1 – Permanent gases



Channel 2 – CO_2, C2, H_2S, and C3



Channel 3 – C4 – C7 hydrocarbons



Technical specification

Analyzer characteristics	Agilent 490 Micro GC Biogas Analyzer	Agilent 490 Micro GC Biogas Analyzer Extended
Micro GC cabinet	Dual	Quad
Number of column channels	2	3
CP-MolSieve 5A column channel	✓ with backflush and retention time stability (RTS)	✓ with backflush and retention time stability (RTS)
CP-PoraPLOT U column channel	✓ with backflush	✓ with backflush
CP-Sil 5 CB column channel	–	✓
All channels equipped with heated injectors (up to 110 °C)	✓	✓
Dual Carrier gas; Argon on Molsieve 5A, Helium on other channels	✓	✓
Sample inlet UltiMetal treated	✓	✓
Heated sample line (up to 110 °C)	✓	✓
O_2/ N_2 separation	✓	✓
CO and CO_2 analysis	✓	✓
H_2S analysis	✓	✓
CH_4, C2, and C3 hydrocarbon analysis	✓	✓
C4, C5, C6, and C7 hydrocarbon analysis	–	✓
Sample type	biogas	biogas and biogas mixed with other hydrocarbon streams (natural gas or LPG)[1]
Typical peak area repeatability (RSD%)	< 0.5 %	< 0.5 %
Analysis time	< 120 seconds	< 150 seconds

Note 1: To introduce of a Liquefied Natural Gas (LNG) or Liquefied Petroleum Gas (LPG) sample on the Micro GC, the use of the Micro-Gasifier is required.

Accessories

The table below gives an overview of the most important Agilent 490 Micro GC Biogas Analyzer compatible accessories. Contact your local Agilent office for more details and accessories.

Product description	Compatible with	Part number
Portable field case for a dual channel cabinet and dual carrier gases	Agilent 490 Micro GC Biogas Analyzer	CP490242
Portable field case for a quad channel cabinet and dual carrier gases	Agilent 490 Micro GC Biogas Analyzer Extended	CP490252
Micro-Gasifier	Both Biogas Analyzers	G7623A#001
Genie filter	Both Biogas Analyzers	Multiple p/n's

Dimensions and weight

	Height		Width		Depth		Weight	
Product description	inch	cm	inch	cm	inch	cm	lb	kg
Agilent 490 Micro GC Biogas Analyzer	11	28	6.5	16	12	30	14	6
Agilent 490 Micro GC Biogas Analyzer Extended	11	28	6.5	16	21.5	55	22	10
Micro GC Power Supply	1.8	4.5	3.4	8.5	6.7	17	3.3	1.5

Ordering information

The Agilent Biogas Analyzers can be purchased by ordering the main part number G3582A and an option number per analyzer type; option numbers for the Biogas Analyzers are displayed below.

Product description	Part number
Agilent 490 Micro GC Analyzer	G3582A
Agilent 490 Micro GC Biogas Analyzer	G3582A#110
Agilent 490 Micro GC Biogas Analyzer Extended	G3582A#111

www.agilent.com/chem/microgc

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