

# COMPACT & PORTABLE GAS & HIGH PERFORMANCE LIQUID CHROMATOGRAPHS WITH UV DETECTION

RAPID SCREENING OF MOLECULES  
WITH SIZE EXCLUSION TECHNIQUE



**MILITARY STANDARD AECTP 400 / GAM EG13 C**

# GPC-UV analysis

## Compact Liquid Chromatograph

*Chromatotec's high performance miniature liquid chromatograph with UV detection is designed for a wide range of applications: from the characterization of liquid hydrocarbons in organic mode, to polymer and biomolecules in aqueous mode.*

*Based on Gel permeation chromatography technique this new solution works on principle that different component shows different affinity towards stationary phase (column packing material). Smaller component gets trapped in the pores of the packing material therefore, these show high retention time. On the other hand, larger components in analyte surpasses stationary phase without much affinity and therefore has lower retention time. Based on this data, processing unit shows varying peaks on display according to which separation of the analyte can be done. Gel permeation chromatography system consists of various components such as pump system, injector system, columns, detectors, and data proceeding systems.*

*The instrument is produced in two suitcases of 23 and 19 kg for easy checked luggage when travelling on planes: one containing the analytical part constituted of an HPLC pump, the column oven, the UV detector, the multiplexer 7 samples and liquid injection valve, and the other one the computer and electronic boards for GPC supervision.*

*The analytical module and electronics can withstand vibrations and impacts of air plane transport including luggage handling (military standard AECTP 400 / GAM EG13 C). It is deployable on site to operate in oil platforms.*

*The analytical module can also be installed on a laboratory bench in less than 10 minutes and the whole system can be operational in less than 1h to start the analysis after conditioning. Thanks to an integrated Pc this analyzer provided on site results at a glance.*

### Chromatotec® Solutions

ChromatotecGroup® is specialized in the manufacturing of automated and certified Gas Chromatographs (autoGCs) for online monitoring of Volatile Organic Compounds (VOCs) or Sulfurs at trace and ultra-trace levels (ppt, ppb).

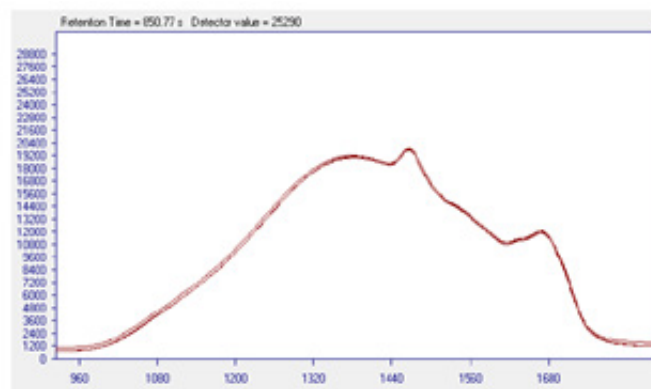
Besides its standard solutions for gas analysis in ambient air and industrial, odor, oil & gas, emission and process applications, Chromatotec® is permanently involved in new turn-key solution developments.

### New Liquid Chromatograph

Over the last decades, liquid chromatography (LC) has experienced an evolution to smaller columns and particles, new stationary phases and low flow rate instrumentation.

However, the development of air-transportable and robust LC systems has not followed, mainly due to difficulties encountered in miniaturizing pumps and detectors, as well as reinforcing each element to ensure system performances after transport.

Based on its wide experience in chromatographic separation techniques, Chromatotec developed the HPLC-UV system described here to meet the market demands.



### Chromatotec® Solutions

Size Exclusion Chromatography (SEC) allows the separation of the different molecular weight fractions of the samples, obtaining their characteristic profiles. In organic mode, the Gel Permeation Chromatography allows differentiating liquid hydrocarbons, such as crude oil, by their distribution as a fingerprint.

# Features & Benefits

## All-In-One-System

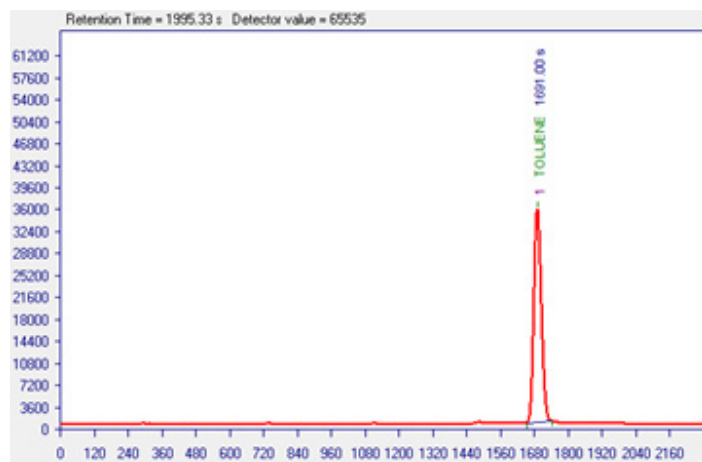
The integrated UV detector with a single-wavelength measures the concentration of aromatic and conjugated compounds present in the samples analyzed. This uses a deuterium (D2) lamp as a light source which emits radiation at 254nm.

The HPLC pump can work at a low flow rates as low as 0.2mL/min for reduced solvent cost and waste. Isopropanol is used as a lubricant for rinsing and conditioning the HPLC pump.

It includes an autosampler for the analysis of 7 samples and 1 rinsing vial.

## High elution time stability

The performances of the system were evaluated using Toluene (retention time, quantification, and column resolution).



A good relative standard deviation (RSD) of 1.5% for the retention time was obtained for crude oil samples in THF.

This shows the high stability of the system, including sample preparation, and process of the results. Its high accuracy allows the high reproducibility and consistency of molecular weight distributions.

## Easy maintenance

This low maintenance system offers considerable cost savings over its lifetime.

The main maintenance tasks that may be performed by the user are: replacing the pump head and clean the flow cell of the UV detector.

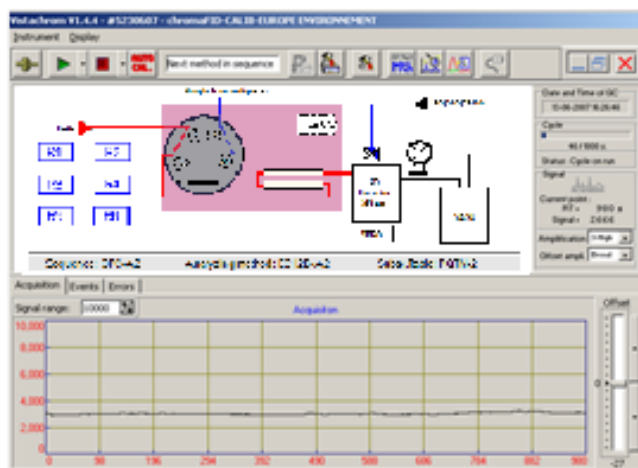
The analyzer is completely autonomous and can be remote controlled using internet connection.

## VISTACHROM Software

The VISTACHROM operating software developed by CHROMATOTEC® offers a user-friendly interface for easy operation and processing of data.

The chromatography software VISTACHROM allows:

- A complete automation of the system.
- The signal acquisition, and data treatment.
- The peak identification thanks to a reference substance table.
- Data saving on the hard disk.
- Trend creation allowing a visualization of the evolution of selected peak retention times and surface (or concentration of the corresponding compounds).



# Technical Specifications

<b>Samples</b>	Liquid Hydrocarbons, polymers
<b>Technology</b>	Size Exclusion Chromatography (SEC) / Gel permeation chromatography (GPC)
<b>Detector</b>	UV (ultraviolet) detection (254 nm)
<b>Molecular range</b>	500-25000 Da
<b>Mobile Phase</b>	Organic/Aqueous solvents
<b>Clinic Solvent</b>	Isopropanol
<b>HPLC pump range</b>	From 0.2 to 10 mL/min and 400 bars (up to 50 mL/min in option)
<b>Gas supply</b>	No gas required for operation
<b>Sampling loop</b>	0.1µL
<b>Autosampler</b>	8 vials of 2mL (7 samples – 1 cleaning)
<b>Dimensions</b>	508 x 356 x 254mm and 559 x 432 x 323 mm
<b>Weight</b>	2 suitcases: 23kg for the analytical part 19kg for supervisor and computer
<b>RSD</b>	< 1.5 % on Retention Time
<b>Cycle Time</b>	40 minutes
<b>Installation Time</b>	10 minutes
<b>Results</b>	Data storage (timestamp)
<b>Communication</b>	<ul style="list-style-type: none"><li>- MODBUS protocol included in standard</li><li>- 4-20mA current output (option)</li><li>- MODBUS / JBUS or MGS1 communication protocol (option)</li></ul>
<b>Supervisor</b>	<ul style="list-style-type: none"><li>- Embedded industrial computer Windows® based with LCD display</li><li>- SSD 128 Go hard disk</li></ul>
<b>Power Supply</b>	115 or 220 VAC



ISO 9001:2015

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