



Chromatec
Crystal 90000
Gas Chromatograph

It's The Time of Separation & Detection





CHROMATEC

Our Mission

Humanity and the world we live in are - more and more - dynamically evolving. In the past few decades, we have grown accustomed of using whole panoply of chemical materials and compounds, digital technologies and communication tools. Modern technologies bring new opportunities, help us to improve our society, and raise our standards of living. At the same time, we are witnessing the emergence of new risks: environmental damages, food contaminations, and the risks of accidents and manmade disasters.

Industrial production technologies and control methods are related so closely, that they foster mutual growth while evolving independently.

Gas chromatography is a mass analytical method applied in all domains of human activities – from ecology, healthcare, and agriculture, to petrochemistry and nuclear energy, as well as many modern scientific applications. Thanks to its high sensitivity and the ability to tailor analysis for specific compounds, gas chromatography occupies a special place among the other instrumental analysis methods. Today, analytical monitoring for contaminants to ensure that they do not exceed healthy and safety limits, food quality control, toxicological diagnostics, process control in production facilities, and material quality control... are unimaginable without gas chromatography.

Our mission is to ensure availability of analytical control tools and to give small and medium-sized enterprises the opportunity to use state-of-the-art chromatography instruments and achieve significant analytical results!.

300+
Qualified
Employee

50+
Patented
Techniques

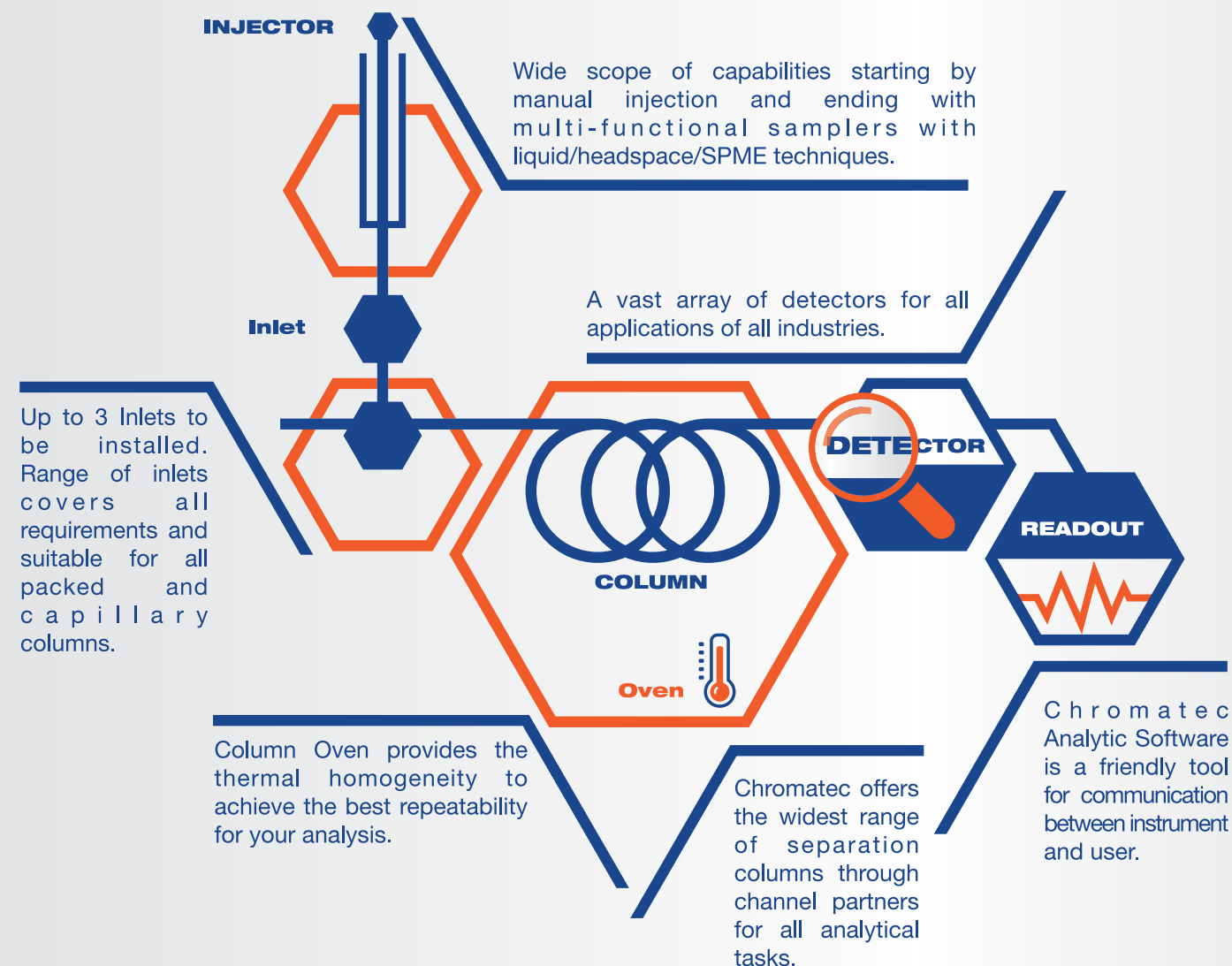
25+
Years
Manufacturing
Experience



EAC



Matches all requirements



All ways to resolve complex samples:

Chromatec provides all solutions to resolve multiple components in complex samples: Dean's switches, GCxGC, Backflush, flow splitters and many others.

Eco-Friendly Operation

Chromatec is guided by objectives of improving operational efficiencies in energy and gas consumption.

Crystal 9000 GC has all functions to reduce the power and gas consumption between analyses or during other periods of inactivity.





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Versatile and Flexible Accurate and stable introduction

Unified Electronic Pneumatic Control

Chromatec UEPC (Unified electronic pneumatic control) offers maximum flexibility to provide all units of the instrument by gas's flow and pressure. UEPC provides fully separate control for each gas channel, with independent set of measuring sensors. Using UEPC carrier-gas flows are automatically adjusted to compensate for changes in ambient temperature and atmospheric pressure.

Key Features:

- Fully automated gas control.
- Maximum total flow up to 1250 mL/min for all gases.
- Flow sensor(s) on every gas channel.
- Stability even with extreme changes in the ambient.
- Advanced leak check system.
- Gas Saver Function.
- 0,01 kPa (0.001 psi) pressure setpoint and control resolution.
- Unlimited number of flow/pressure ramps.



Reduce the cost of your system by Flow split technique. Flow split could be used to provide gases for two similar detectors by divided gas flow from one channel UEPC.

Crystal 9000 GC Oven:

Crystal 9000 GC Oven made from high quality and resistance materials and offers high accuracy and uniform temperature.

Oven temperature range up to 450°C meets all requirements for all gas chromatography applications.

Unlimited number of programing steps increase the functionality of the system to create and run any analytical method.

Fast cool-down and switching-off by one key

One press to cool down and switch off the system, by pressing this key the all system units will start cooling down and only after reaching the safe temperature the system will switch off automatically.

Oven Ventilation Unit

This is optional cooling system, consisting of an exhaust fan for fast removing of hot air from the oven. The system enables reducing of cooling time up to 3.3 min for oven's temperature from 400°C to 50°C.

The advanced inlet range of Crystal 9000 GC enables all demanding applications and ensures that problematic samples can be analyzed. All Inlets has gas saver and leak check features.

Packed Column Inlet:

| | |
|--------------------------------|---|
| Separation Column Suitability: | Packed columns, micro-packed columns |
| Gas Control: | Fully Automated |
| Maximum Temperature: | 450°C |
| Total Flow: | 500 mL/min (standard), 1250 mL/min (option) |

Split/Splitless Inlet:

| | |
|--------------------------------|--|
| Separation Column Suitability: | Capillary columns (0.05...0.53mm I.D.) |
| Operating modes: | Split, Splitless, Pulsed Split, Pulsed Splitless |
| Maximum Temperature: | 450°C |
| Maximum Split Ratio: | 12500:1 |
| Maximum pressure: | 1050 kPa |
| Total Flow: | 1250 mL/min for any gas |

Programmable Split/Splitless:

| | |
|---------------------------------|--|
| Separation Column Suitability: | Capillary columns (0.05...0.53mm I.D.) |
| Operating modes: | Split, Splitless, Pulsed Split, Direct On-Column, Pulsed Splitless, Large Volume Injection |
| Maximum Temperature: | 450°C (standard) , 500°C (option) |
| Programmable Temperature Range: | from +40 to 450°C (Fan cooling) from -70 to 450°C (with LCO ₂ cryogenic option) from -160 to 450°C (with LN ₂ cryogenic option) |
| Max heating rate: | 500°C/min |
| Maximum Split Ratio: | 12500:1 |
| Maximum pressure: | 1050 kPa |
| Total Flow: | 1250 mL/min |

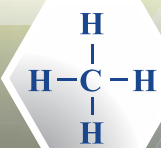
Oven cooling unit

Oven cooling unit is high efficient cooling device coupled with Crystal 9000 GC to extend the temperature range. With Oven cooling system the column oven can operate from -10° to 450°C to obtain low temperature applications. Oven cooling system operates without any special cryogenic agent like Liquid N₂ or CO₂.



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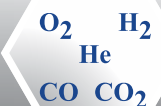
Precise Detection

**FID**

Flame Ionization Detector (FID) – universal high sensitivity detector for analysis of organic compounds. FID equipped with automatic flame ignition and re-ignition function.

**FPD**

Flame Photometric Detector (FPD) – selective detector for phosphorus and sulfur containing compound. The inert jet exclude contact sample with the metal surfaces, thereby preventing sorption of labile components.

**TCD & μ -TCD**

Thermal Conductivity Detector (TCD) – universal detector for organic compound and gases. Commonly used for analysis of permanent gases. TCD is available in several modifications, in different types of filaments and in smaller chamber volume (μ -TCD).

**ECD & μ -ECD**

Electron Capture Detectors (ECD) is high sensitive and selective detector for halogenated organic compounds with wide linear range. Available also with smaller chamber (μ -ECD)

**NPD**

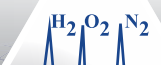
Nitrogen Phosphorous detector (NPD) – selective detector for Phosphorous and Nitrogen containing compounds.

**PID**

Photoionization Detector (PID) – detector with high sensitivity for aromatic compounds (more than 10 times than FID). PID is working with ultraviolet krypton lamp.

**CCD**

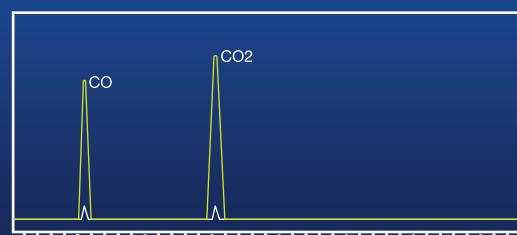
Catalyst Combustion Detector (CCD) – is commonly used for determination of hydrogen and oxygen. The measuring principle is based on thermal effect of catalyst combustion of target compounds on the surface of platinum thread.

**PDD**

Pulsed Discharged Detector (PDD) – the most sensitive detector for permanent gases. With detection range up to ppb-level. Available throw Chromatec Channel Partner: VICI (Valco Instruments Company Inc)

Methanizer

Crystal 9000 Methanizer - Allows to detect very low concentrations of carbon monoxide and carbon dioxide. It consists of a flame ionization detector, preceded by a hydrogenating reactor, which converts CO_2 and CO into methane CH_4 .



Quantitative and Qualitative

Chromatec Crystal GC-MSD

Chromatec's, unique GC-MSD solutions offer both unsurpassed sensitivity and unparalleled stability for a wide range of applications in any laboratory. The system can deliver high-performance, throughput and accuracy.

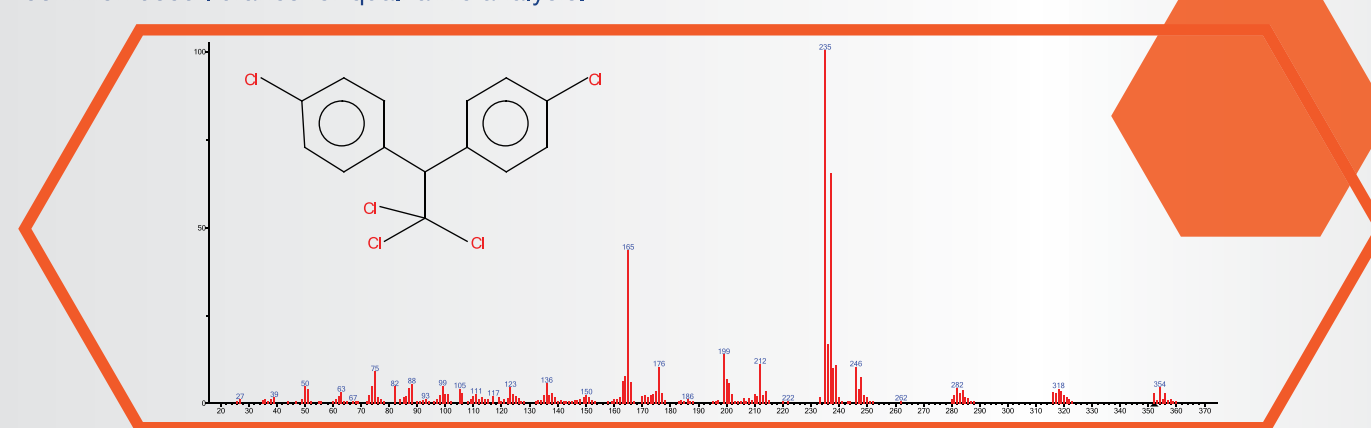
Chromatec Crystal is fully automated, designed for very easy service and has a user friendly software. Instrument features a wide range of accessories and compatible with all Chromatec's sample introduction systems.

Key features

- Standard EI source and optional CI source
- Ion Source is made of an inert metal with minimal adsorption
- High sensitivity detection system with off-axis 10 kV dynode and long life electron multiplier
- Operation modes: Scan, SIM, simultaneous Scan and SIM
- Tune modes: Auto and Manual
- Vacuum gauges: Pirani gauge for fore-vacuum (standard) and ion high vacuum gauge (optional)
- Integrated Leak Test
- Start Delay possibility for increasing filaments life
- Glass window for observing filament operation
- Dual reagent gas for CI.

Easy Search in the Library:

Chromatec Spectrum Software provides all tools for data handling of mass spectrometer with easy search in all common used libraries for qualitative analysis.

**Direct Probe System**

Chromatec Direct Probe System (DPS) – is an additional accessory for sample introduction directly into MSD without previous manipulation.

The Direct Probe System is designed to analyze largely pure or single substances solid or less volatile liquid samples.

Chromatec
GC-MSD
instruments

For Identification and quantification

World highest system capability:

- Up to 3 inlets
- Four Detectors + MSD
- Up to 6 valves
- Up to 13 heating zones

Autosamplers with all functions:

- Liquid Injection
- Headspace
- SPME

Unlimited number of programming steps
for oven temperature/pressure/flow.

Maximum pressure: 1050 kPa for all
gases (H₂, He, N₂, Ar).



Unified Electronic Pneumatic Control (UEPC) is
the most versatile gas managing system with flow
sensor for every gas channel.

0.01 kPa or 0.001 psi Pressure setpoint and
control resolution.

Cooling up to -10°C without cryogenic gases.

Hydrogen Generators

Chromatec Hydrogen generators product line offers a wide choice of generators with different capacities, output pressures and purities to supply all flame detectors (FID, FPD & NPD) or to be used as carrier gas.

Air Compressor

Chromatec Air Compressor – easy to use and low noise instrument to provide gas chromatograph by compressed air.

Gas Purification

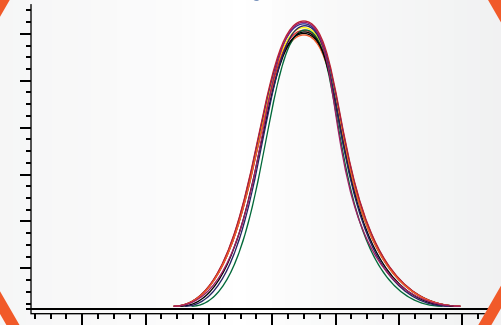
Chromatec provides a full range of filters, traps and catalyst filtration devices for high purification of carrier and detector gases to reach the maximum clear results and longest possible life time for system components.



Accuracy & Repeatability

Thanks to high stability and accuracy of Crystal 9000 units the system achieves excellence retention time reproducibility and improve precision in time for multi-dimensional and low-pressure applications.

12 Overlaid chromatograms



Comfortable Communication

Chromatec Crystal 9000 offers optional full-color Touch-Screen interface to make the operation easier.

By using the touch screen interface the user can control all system parameters and get all data and results on screen.

With one touch you can access the functions you need!



FPD & FI Sensor – The way to Universality

Beside the main function of the FPD – the measuring of S- or P- compounds, the user can simultaneously check hydrocarbon matrix (without quantifying the hydrocarbon composition). For this, FPD could be equipped by additional option - FI sensor. The presence of the FI sensor frees it from having a full flame ionization detector (which is more expensive), and providing additional space for other detectors on the chromatograph analytical platform.

Valves:

Chromatec provides both an own developed, and third party's (through channel partners) valves to build multidimensional analytical solutions.

Piston Injector

Chromatec piston injector provides injection of liquified samples under high pressure up to 10 MPa.

The maximum temperature of evaporation cell (400°C) insures the highest efficient evaporation of the sample.

The piston injector could be equipped with optional cooling system.





CHROMATEC

All Ways for Sample Introduction

Simple & Easy to use

Single-Channel Liquid Autosampler

AS 2M - Single-Channel Liquid Autosampler for injection of liquid samples into GC with simple and reliable design, elementary installation and easy operation.
Carousel capacity: 22 samples and washing vials.
Two syringe washing techniques: top washing and vial washing to get maximum purity of analysis.

High capacity Liquid Autosampler

AS 2M 3D- High Capacity Liquid Autosampler for Injection in every GC Inlet port.
Tray capacity: 150 samples, 4 washing and 2 wasting vials.
Two syringe washing techniques: top washing and vial washing to get maximum purity of analysis.

Headspace Sampler

AS 2M (3D Headspace) is a static headspace autosampler as base unit and upgradable by options for liquid sample injections and SPME. AS 2M 3D Headspace Autosampler realizes static headspace technique by heated syringe injections to every GC inlet port. It is easy to use and configure onto Chromatec GC or GC-MSD systems.

Thermal Desorber

Chromatec Thermal Desorber product line provides the ability to measure volatile contaminants in air, plastic materials, building materials and food. Also it provides unique analyses in vapor emissions' testing applications: for example in forensics and defense.



DRP 4 Manual Headspace

DRP4 - economical solution enables you to use the headspace technique to measure volatile and semi-volatile compounds in your sample without additional preparation. The system does not connect directly with the GC and it can be used with any existing gas chromatography system.
The high cost of automated headspace systems limited the headspace technique uses, but now, DRP4 with low ownership cost and advanced design achieves excellent performance with high accuracy and reproducibility.



Crystal 9000 GC is fully controlled by the Chromatec Analytic Software.

The interface of Chromatec Analytic is customizable and designed for every unique needs of every user and flexible for every skill level.

Chromatec Analytic software efficiently provides:

- Fully automated instrument control
- Data Acquisition and Storing
- All operations of integration of chromatographic data
- Wide options for data quantification based on normalize, ISDT or ESDT calibration
- Reporting in customized layout

Coupled with Chromatec Spectrum software, it supplies users with full package of tools of Mass Spectrometry:

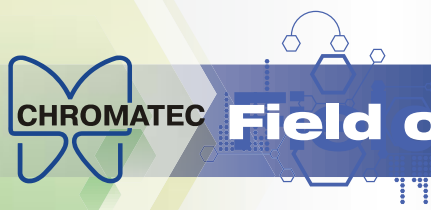
- Full control of GC-MSD parameters
- Quality & Quantity Analysis
- Searching and matching with assistance of the most world-spread spectral libraries (NIST, Wiley and many others)

Chromatec additional software:ware:

Chromatec Analytic provides additional options for data calculations and reporting for specific applications in accordance with ASTM, ISO, EN, DIN, GOST or customized methods:

- SimDist (Simulated Distillation)
- DHA (Detailed Hydrocarbon Analysis)
- LPG (Liquefied Petroleum Gas Analysis)
- Gas (For Natural & Refinery Gas Analysis)
- Energetic (Transformer Oil and Gas Analysis)
- Gasoline (For Gasoline Analysis)





Field of application

25 years of experience in gas chromatographs manufacturing launched us toward the future, to develop analytical solutions that achieves the maximum performance, robustness and cost efficiency for all requirements and budgets of all customers in all fields:



Oil & Gas

Flexibility in solutions against all challenges. Dedicated and pre-configured analyzers for most demand applications for natural, refinery & liquefied gas, and crude oil & petroleum products.



Industrial

The fast growth of our industrial world requires huge development in technology. Crystal 9000 GC is a powerful tool to exam the products and raw materials for all needs of Petrochemical, Chemical, Biotechnology or Mining Industries.



Environment

Chromatec instruments obliged to high environment monitoring standards and protecting. Crystal 9000 GC & GC-MSD obtain high limit of detection for determination of harmful pollutants such as pesticides, herbicides and chemical contamination to guarantee Air Quality & Safe Nature.



Food & Beverages

Although, the vast variation of food & beverages presents a huge volume of test parameters for quality insurance, Crystal 9000 GC is for the challenge! And its variations in accessories are designed to meet the different needs of customers, in all laboratories: with low or high sample throughput.



Forensic

Crystal 9000 GC & GC-MSD is an accurate and precise tool to detect and specify drug of abuse, toxics, explosive materials. And successfully served in many criminalistics laboratories.



Pharmaceutical

Accuracy and validity are key factors in pharmaceutical industry. Crystal 9000 GC has been designed to meet these requirements in the highest performance. For all phases of validation, Chromatec provides IQ/OQ/PQ protocols to establish a documented evidence of high assurance.

Chromatec solutions covers vast range of industries and applications integrated with international standards: **ASTM, CEC, DIN, EN, ENV, GPA, IP, ISO, UOP, EPA, GOST, USP** and many others.

Count on us

Customized solutions

Chromatec GC standard solutions meet a vast range of applications in wide field. And when such solutions don't match the customer requirements, the standard systems are to be re-configured. For such cases, Chromatec offers special-designed systems. Crystal 9000 GC has unique and flexible design to achieve this task with minimal efforts and costs, supported by Chromatec's team experience in designing and commissioning customized solutions.



Service and support

Our efficiency in technology can only be matched by our care for customer. Chromatec customer service and support policy offers a variety of programs for technical and application support including:

- Standard Warranty on all products.
- Extended Warranty at demand.
- Training and certification programs in our full-equipped training center.
- Online Application support.
- Expert advice on analytical methods.
- Software updates for contract customers.

Our priority is the satisfaction of our customers. All your feedback, suggestions and recommendations are highly appreciated and the base of our advance.

For more information, please visit our web-site: www.chromatec-instruments.com



For more information:

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info@chromatec-instruments.com
Or visit our web site:
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March 5th, 2016
09-100-6019EN