

GBPI TESTER

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**GB-LC01**  
**Liquid Chromatographs**

# GBPI

## COMPANY PROFILE

GBPI is a supplier of flexible packaging testing equipment, mask testing equipment, and spouting machine testing solutions. It has more than 20 years of experience in the field of testing equipment. The company has a dedicated R&D and after-sales team, which can accept customer testing and on-site teaching machine services. Not only that, we can also help customers with one-stop customized laboratory testing solutions. GBPI has passed ISO 9001 certification, we have become a large-scale testing agency supplier, and cooperate with many international standards organizations. According to customer requirements, we can provide CE, ISO, CNAS calibration certificates, etc. We have established long-term cooperative relationships with large international third-party giants such as SGS, BV, TUV and Intertek. Excellent quality and top after-sales service help GBPI to be recognized by our customers.



### Our Mission

Achieving quantifiable quality



### Corporate Vision

Committed to being a leader in digital quality



### Core Values

Product quality is our life



# LABORATORY





National Reference Material Certificate

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CMA Metrology Certification

CMA: It is the laboratory qualification certification, called measurement certification. It is the abbreviation of China Metrology Accreditation. According to the provisions of the China-Republic Metrology Law, the certification and evaluation of the testing capabilities and reliability of testing institutions by the government at or above the provincial level-the Ministry of Metrology.

Only the third inspection agency that has obtained the certificate of metrological certification is allowed to use the CMA chapter on the inspection report. The inspection report with CMA certification can be used in product quality evaluation, results and judicial appraisal, and has legal effect. GBPI has obtained CMA certification in 2018.



National CNAS certification (Chinese/English)

CNAS accreditation is the abbreviation of China National Accreditation Service for Conformity Assessment (CNAS). It is a merger based on the original China National Accreditation Service for Conformity Assessment (CNAB) and China National Accreditation Service for Laboratories (CNAL). Reorganized.

Obtaining this certification represents the country's recognition of the testing and calibration capabilities of GBPI laboratories. It also indicates that the measurement results of GBPI testing and calibration products in the laboratory will be recognized by all member testing organizations around the world.



High-tech Enterprise Certificate



Quality Management System Certificate (ISO)



Self-supporting bag sealing machine bag holder



Tail gas recovery device for determination of evaporation residue



Packaging material transmittance test device



Water vapor transmission rate tester



Air permeability meter (D5-Y10)



CE certification



Heat sealer appearance design certificate



Compression tester appearance design certificate



Appearance design of friction coefficient meter



Sealing instrument appearance design



Cold and hot dual chamber evaporation residue tester



**High quality that you can see and feel**  
**Processing ahead of domestic counterparts**  
**Reliable and stable infusion and testing systems**  
**Convenient and easy-to-use design for a human touch**

# GB-LC01

## Liquid chromatographs

### Leading processing technology in China

Specially hired a famous foreign industrial design company for shape design

The cabinet is made of corrosion-resistant material to avoid corrosion of the material due to solvent leakage during long-term use

### Better liquid phase configuration, more options

The new LC-100 is equipped with a semi-preparation system, a preparation system, a quadruple low pressure gradient system, a single UV detector, a differential detector, a fluorescence detector and an evaporative light scattering detector.

The autosampler further completes the liquid phase configuration.

Also available in a simple, and professional version, the workstations offer the user more versatility.

### Real-time display of unit operation and comprehensive user-friendly replacement of consumables

The workstation has full control over the operation of the units (except for certain special detectors).

Real-time display of the operating status of each component consumables replacement is fully user-friendly

## Chromatography Workstation Software System

Two types of chromatography workstation software are available for different users, so you can choose the most suitable software system according to your application requirements

### Workstation Software - Professional Edition

This workstation has been custom built for Wufeng Instruments by one of the world's leading chromatography specialist software companies. The company has supplied professional chromatography working software to several internationally renowned chromatography manufacturers. Various forms of 24-bit high-precision chromatographic signal acquisition modes are available for digital control of the chromatograph and autosampler

The workstation complies with data GMP certification, FDA approval, data validity security, system certification tool (Q/0Q) and system suitability test. (SST) and other requirements. Efficient batch processing functions enable control of the instrument, autosampler sequence acquisition, auto-integration calibration and output reports all in one go. Powerful post-processing functions, spectral comparison. The instrument is equipped with a wide range of post-processing functions, such as spectral comparison, recalibration, data input and output, and 3D spectral processing.

A full-featured interface for a wide range of analysis needs. The workstation graphically illustrates complex functions and arranges the icons in the administration window in the order of realistic instrument combinations so that you can see them at a glance

## Chromatography Workstation Software System

The WS100 chromatography workstation uses an RS232 serial or USB interface and a fully digital signal output, enabling full inverse control of all instrument configurations and fully automatic integration of the system. With a more streamlined interface, the WS100 has the ability to meet daily analysis functions as well as the usual advanced functions such as spectral scanning and variable wavelength scanning, as well as professional integration of spectra in post-processing. The simplicity of the interface makes it easy to use. Simplicity meets the needs of most users

### Gradient elution

The user simply enters the various mobile phase ratios, flow rates and their change times in the relevant lists. The gradient elution can then be easily and accurately implemented. In addition, the software provides corresponding pump flow curves to allow the user to calibrate the gradient settings and to visualise the progress of the gradient.

### Spectral scanning

To test the ambient light, the software offers a spectral scan function. Firstly, the user can visually detect the intensity of the neon lamp at different wavelengths and can judge whether the lamp needs to be replaced accordingly. Secondly, the position of the 486nm and 656nm points on the graph can be used to determine

### Event relays

To test the ambient light, the software offers a spectral scan function. Firstly, the user can visually detect the intensity of the neon lamp at different wavelengths and can judge whether the lamp needs to be replaced accordingly. Secondly, the position of the 486nm and 656nm points on the graph can be used to determine

## New P100 high pressure constant current pump

P100 high pressure constant flow pump is a product widely praised by users



- Lower noise, higher reliability
- This upgrade continues the classic reciprocating parallel pump design, featuring high flow accuracy and low pressure pulsation
- The original one-way valve design consists of a valve core body, a gem ball seat and a gem ball to form an integral structure
- Upgrade to add plunger rod automatic retracting function, you can easily replace the seal ring without opening the case
- Extend the warranty time and provide a more comprehensive after-sale service
- For users who use the buffer salt system, a pump with post-column cleaning function is specially introduced



Original one-way valve design



Reciprocating double plunger parallel pump

### Product main parameters

Model	P100 infusion unit
Liquid delivery system	Double injection plug reciprocating parallel pump with binary high pressure mixer
Flow range	0.001~9.999mL/min
Maximum output pressure	42MPa
Flow accuracy	≤±0.3%
Qualitative repeatability	RSD <sub>6</sub> ≤0.1% (naphthalene/methanol standard sample)
Quantitative repeatability	RSD <sub>6</sub> ≤0.1% (naphthalene/methanol standard sample)
Pulsation	0.1MPa
Power supply	220V/110v

## Complete liquid phase configuration

Semi-preparation pump, high-pressure semi-preparation, high-pressure preparation pump

Compatible analysis and preparation requirements for semi-preparative liquid chromatography systems



### Main parameters of semi-preparative liquid chromatography system

Model	LC-100HP (40mL) semi-preparative system
Flow range	0.01-40mL/min
Pressure range	0-25Mpa
Flow accuracy	±2%
Flow rate accuracy	RSD<0.1%

### Main parameters of high-pressure semi-preparative, preparative liquid chromatography system

Model	LC-100 (120mL) high pressure preparation system LC-100 (50mL) high pressure semi-preparative system
Flow range	0.01-120mL/min
Pressure range	Pressure range
Flow accuracy	±2%
Fluidity accuracy	RSD<0.1%

# Binary high pressure system quaternary gradient system

## Suitable for different of gradient blends

The binary high-pressure system with high-precision parallel pumps fully guarantees the stability of the infusion and can meet the accuracy requirements of high-pressure gradient analysis.

The quaternary gradient system is equipped with a fully imported four-channel online degassing and proportional solenoid valve, which can easily realize the replacement, mixing and cleaning of multiple mobile phases, and the operation is more convenient



Binary high voltage system



Quaternary gradient system

## Product main parameters

Model	LC100HP (binary high pressure)
Mixing principle	Dual pump controlled gradient ratios for different flow rates
Number of liquids mixed	2 types of liquid
Mixing Accuracy	±1%
Mixing precision	±0.2%
Qualitative repeatability	RSD <sub>s</sub> ≤0.1% (naphthalene/methanol standard sample)
Quantitative repeatability	RSD <sub>s</sub> ≤0.3% (naphthalene/methanol standard sample)

## Product main parameters

Model	LC100HP (quadratic gradient)
Mixing principle	Proportional valve switching times control gradient ratios
Number of liquids mixed	2 -4 types of liquid
Mixing Accuracy	±2%
Mixing precision	±0.3%
Qualitative repeatability	RSD <sub>s</sub> ≤0.2% (naphthalene/methanol standard sample)
Quantitative repeatability	RSD <sub>s</sub> ≤0.3% (naphthalene/methanol standard sample)

# UV-100 UV detectors UV-VIS100 UV-Vis detector

This upgrade of the UV100 detector introduces the Wufeng Instruments ultra-high pressure, ultra-fast liquid chromatograph design concept to minimise distortion due to system errors.



The all-digital switching system avoids the signal distortion and interference caused by the multi-analog-to-digital conversion of the chromatographic signal of the general ultraviolet detector.

The tritium lamp is fully upgraded to 2000 hours imported tritium lamp. Longer service life and better detection sensitivity. The wavelength range covers 190~680nm.

The flow cell adopts the patented design of parallel double cone holes, the signal-to-noise ratio is greatly improved compared with the traditional flow cell,



Flow cell

Newly launched optional tungsten light source, fully covering the visible light range. The wavelength range is 190-900nm.

The minimum detection concentration can reach 3x10<sup>-9</sup> g/mL. Has excellent detection sensitivity



Tritium lamp

## Product main parameters

Model	UV-100 ultraviolet detector	UV-VIS100 UV detector	UV-100S Preparative UV Detector
Flow cell volume	8uL	8uL	6uL
Light source	Tritium (D2)	Tritium (D2) lamp + tungsten (W) lamp	Tritium (D2)
Wavelength setting range	190~680nm	190~900nm	190~680nm
Spectral bandwidth		8nm	
Wavelength accuracy		± 1nm	
Wavelength precision		0.1nm Below	
Noise	≤0.25×10 <sup>-5</sup> AU (static)/±1×10 <sup>-5</sup> AU (dynamic, under specified conditions)		
Drift	≤0.4×10 <sup>-4</sup> AU/h(static)/≤2×10 <sup>-4</sup> AU/h(dynamic, under specified conditions)		
Minimum detection concentration	3 x 10 <sup>-9</sup> /mL (naphthalene/methanol solution)		



# Intelligent ARCUS 5 autosampler

Arcuss comes with its own control software, which is fully computer-operated, simple and convenient, and extremely easy to use. It can quickly and easily perform sample analysis, dilution, mixing and other operating functions.

The use of jewel rods as the active metering pump, the service life of the sealing ring can reach more than 1 million times, and the loss of metering accuracy and the trouble of replacement caused by the wearable parts to the user are minimized. Under normal use conditions, it does not need to be replaced for 3 to 5 years.

The advanced self-protection function can stop and remind the operator in time even if there is a misoperation, so as to reduce the serious damage to the equipment caused by the misoperation.

The injection range is 0.1-120L, ensuring high-precision injection of large and small samples.

The injection cycle is short, and the repeated injection efficiency is higher. The sample can be re-injected quickly and efficiently, thus saving time.

Use various optimization measures to reduce cross-contamination of samples.

The Arcuss autosampler can be matched with various types of liquid chromatography systems of various manufacturers on the market.



Patent:  
[2012.2.0010632.2](#)  
[2012.2.0540207.4](#)  
[2011.2.0431981.7](#)  
[2013SR056355](#)



Model	Arcus 5 autosampler
Sample loading	Basic tray (1) 2mL×54 position (factory standard configuration)  (3) 4mL×35 position Each side can be selected, one type of pallet both sides can be placed, any type of pallet System automatically recognises tray size up to 108 positions (2mL vials) Sample bottle height
Sample bottle height	H ≤ 52mm (including spacer and cap)
Metering pump volume	200 uL (accuracy 0.1uL)
Sampling Mode	Full quantitative ring sampling method Partial quantitative ring sampling method Non-depleting sample taking method
Sampling volume	Full quantification ring sampling method: 0.1~120uL (according to quantification ring volume), 50uL (standard) Partial dosing ring sampling method: 0.1~100uL (expandable to 200uL) Sample lossless sampling method: 0.1~100uL (expandable to 200 uL)
Quantitative repeatability	Full quantitative loop sampling method: RSD <sub>6</sub> ≤0.3% Part of the quantitative loop sampling method: RSD <sub>6</sub> ≤0.5% (injection volume ≥10uL) Sample lossless sampling method: RSD <sub>6</sub> ≤ 1.0% (injection volume ≥ 10uL)
Sample residue	≤0.005% (specified cleaning program)
Greatest pressure	40MPa (conventional) 60MPa (super high efficiency system)
Automatic protection function	Bottle shortage alarm, thimble alarm, pipeline blockage alarm, leak alarm
Power supply	AC 115~230V, 50/60Hz

## Column thermostat

The integrated design of the temperature control part and the solvent tray is adopted, the function is more practical, the temperature control is more stable, and the temperature control range is 5°C-80°C above room temperature. Reproducibility of retention time is good. Two chromatographic columns can be placed at the same time, which can satisfy the serial analysis of chromatographic columns. The system is all controlled by digital anti-control technology, and all operations can be completed on the computer.



### Product main parameters

Model	CO100 column thermostat
Principle of temperature control	Air circulation heating
Temperature setting range	Room temperature 5°C~80°C
Temperature setting error	±2°C
Temperature accuracy	±0.1°C
Accommodate chromatographic columns	2 pieces (250mm)
Power supply	220V/110V

## RI100 Differential detector

The RI100 differential refractive index detector is a universal detector widely used in liquid chromatography analysis. It responds to all solutes, and some components that cannot be detected by selective detectors, such as polymer compounds, sugars, and fatty alkanes. Rotten, etc., can be detected with a differential detector. Used in conjunction with the Wufeng liquid chromatography system, it can be widely used in chemical, petroleum, pharmaceutical, food and other fields for scientific research and production services. The R100 refractive index detector has the advantages of reliable performance and simple operation.



### Product main parameters

Scope of test	0.25~512u RIU	Pool volume	8μl
Drift	200nRIU/h	Maximum flow rate	10mL/min
Linear range	≥600uRIU	Maximum back pressure	50KPa
Noise	≤2.5 nRIU	Temperature control	Closed, 30~50°C (1°C each time), 77°C fuse (dual temperature control)
Response time	0.1,0.25,0.5,1.0,1.5,2,3,6sec	Integrator output (Sensitivity)	DC 0~1V(2mV/μ RIU, 8mV/μ RIU)

## ELSD100 Evaporative Light Scattering Detector

The evaporative light scattering detector is a universal detector. The ELSD universal detection method eliminates the common difficulties in traditional HPLC detection methods. Unlike ultraviolet and fluorescence detectors, the response of ELSD does not depend on the optical characteristics of the sample, and any volatility Samples below the mobile phase can be detected without being affected by their functional groups. The detection of all compounds except low boiling point compounds is now commonly used to detect substances without UV absorption.



### Main indicators

Light source	Laser diode with corrective mirror, 670nm, maximum output less than 5mW, FCC safety standard
Detection element	Silicon photodiode
Temperature range	Room temperature to 110°
Atomizing gas	Nitrogen is better, the maximum is 3.0L/min
Pressure operating range	15-90psi
Flow velocity	0-5mL/min
Analog output	Choose between 0-1V or 0-10mV full scale
Signal communication	TTL/contact closure-error, used for LC pump shutdown
Selection of operating parameters	Keyboard input operating parameters
Screen display	LCD

According to customer application requirements, other special detectors can be provided for selection.

## Other Accessories

### Column

After rigorous testing and screening, the instruments are equipped with high-performance chromatographic columns, with a wide pH range, good separation effect and high column efficiency. It can meet different conditions of sample analysis and guarantee the reliability and stability of instrument analysis to the greatest extent.



### Guard column

Simple design, exquisite workmanship, universal connector, matching any brand of liquid column, effectively protect your chromatographic



### Stainless steel quantitative ring

The loop is made of high-quality 316L stainless steel. Use hand-tight high-pressure joints, high pressure resistance, easy to replace.



### Filter head

International standard design, thread tightening, easy to replace, not easy to fall off, make full use of the filter membrane area, filter more samples, good filtration effect.



### High pressure hand tight fittings

Stainless steel tubing can withstand high pressures up to 80MPa and PEEK tubing up to 45MPa. The brown ferrule is held in the best position during installation and there is no dead volume at all when connecting any column.



### In-line filter

The in-line filter is made of stainless steel and has a built-in 0.45µm sieve plate, which effectively prevents particulate matter from entering the system in the solvent. The sieve plates can be easily replaced and cleaned.



### High precision 1000µL mixer

The new generation of high-efficiency mixers features a small size and high mixing homogeneity, enabling the mobile phase to be fully mixed in a shorter time. The mixing effect is comparable to that of international advanced mixers.



### Semi-preparative pump mixer

The gradient comes standard with a 2000µL static mixer that mixes liquids homogeneously in the shortest possible time, with excellent gradient linearity and reproducibility.



### Microvolume Mixers

The new generation of microvolume mixers are available in 80µL and 150µL versions. Small volume, high mixing homogeneity and the option of two or three in series.

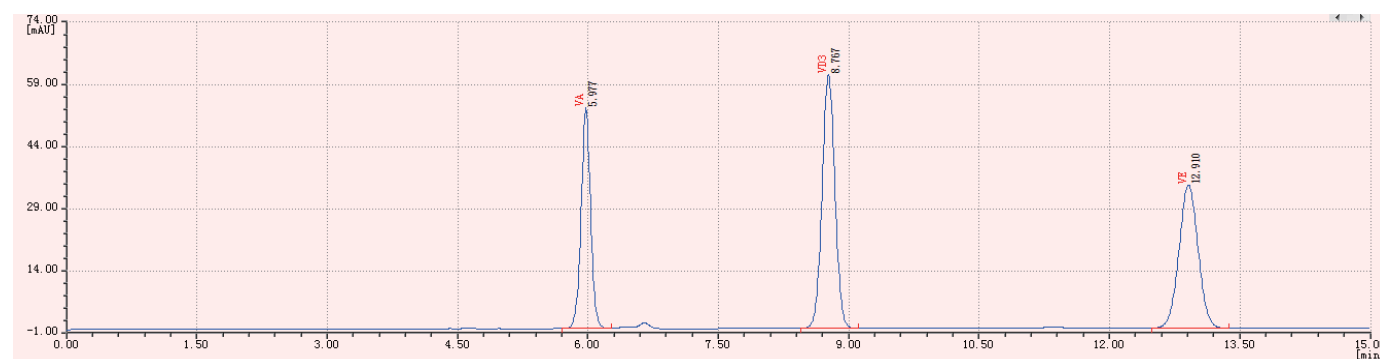


## GB-LC01 Liquid chromatography system



# Examples of applications in various fields

## Applications in the food sector (vitamin analysis)

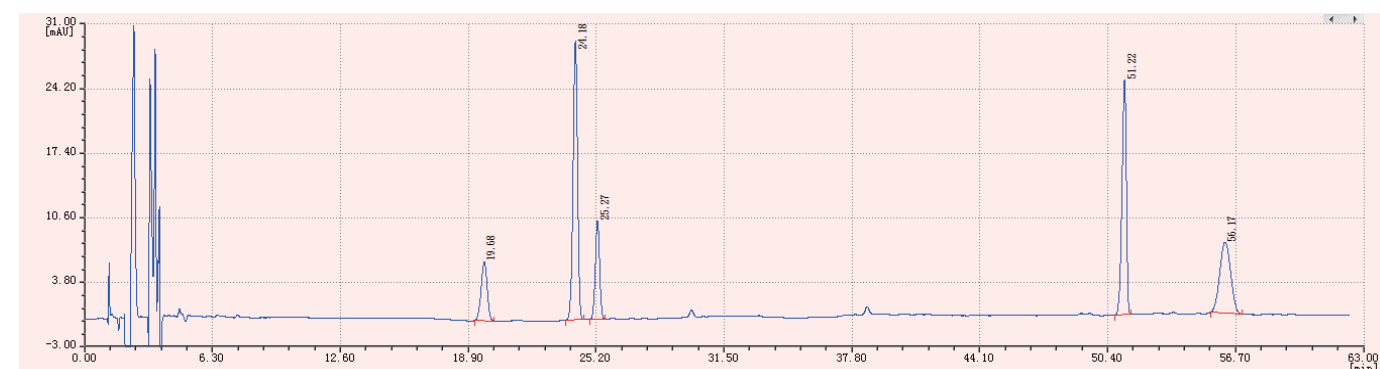


Sample Name: Vitamin A,D,E Standard  
 Chromatographic columns: SHODEX C18  
 Column length: 250mm  
 Column temperature: 30°C  
 Detection wavelength: 0-7.5-10.5min, 326-264-285nm

Sample Name: 20µL  
 Mobile phase: Methanol  
 Flow rate: 1.000 mL/min

1 Vitamin A 2 Vitamin D3 3 Vitamin E

## Application in the analysis of natural drugs (Panax ginseng total saponin)



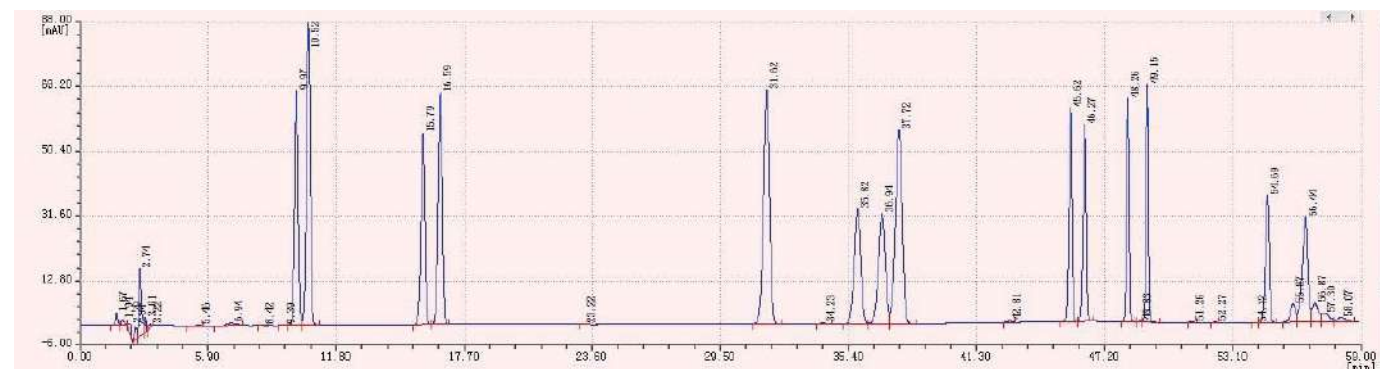
Sample Name: Panax ginseng saponin, Ginsenoside  
 Chromatographic column: Pntutips RSZG-C18, 5µm, 4.6×250mm, 5GEICO125;  
 Temperature: 30°C  
 Flow rate: 1.0mL/min  
 Detection wavelength: 203nm

Sampling volume: 10 µL  
 Mobile phase: A:acetonitrile B:water

Time (min)	A%	B%
0	19	81
12	19	81
60	36	64

1 Panax ginsenoside R1 2 Ginsenoside Rg1  
 3 Ginsenoside Re 4 Ginsenoside Rb1 5 Ginsenoside Rd

## Application in industrial product testing (plasticizer analysis)



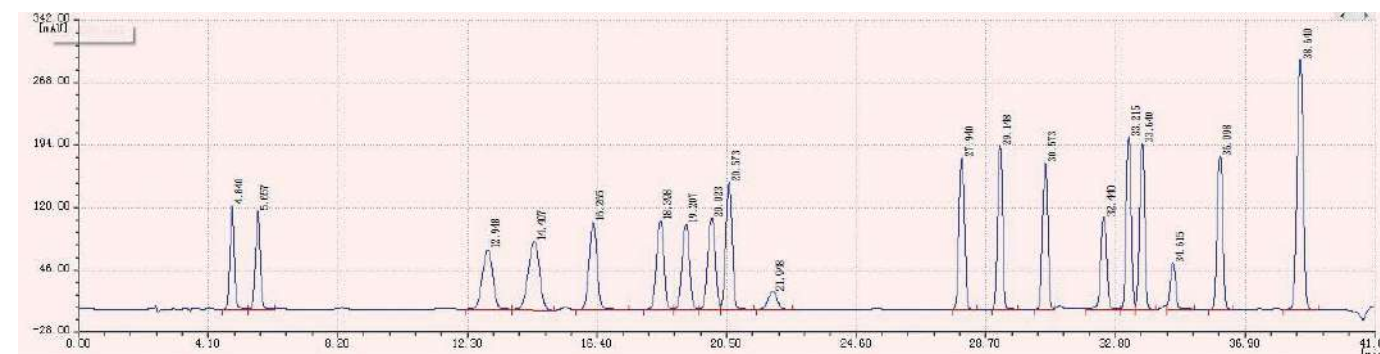
Sample name: Plasticiser standards  
 Chromatographic columns: Pntulips BP-C18,5µm 4.6×250mm  
 Wavelength: UV242nm  
 Temperature: 30°C  
 Sampling volume: 10µL

### Order of peaks:

No.	Peak exit time (min)	Name	Abbreviations
01	9.97	Dimethyl phthalate	DMP
02	10.52	Diethyl phthalate	DEP
03	15.79	Diisobutyl phthalate	DIBP
04	16.59	Dibutyl phthalate	DBP
05	31.62	Bis(2-methoxyethyl) phthalate	DMEP
06	35.82	Bis(2-methoxyethyl) phthalate	BMPP
07	36.94	Bis(2-ethoxyethyl) phthalate	DEEP
08	37.72	Dipertyl phthalate	DPP
09	37.72	Dihexyl phthalate	DHXP
10	45.62	Benzyl butyl phthalate	BBP
11	46.27	Benzyl butyl phthalate	DBEP
12	48.26	Dicyclohexyl phthalate	DCHP
13	49.15	Bis(2-ethylhexyl) phthalate	DEHP
14	54.69	Diphenyl phthalate	-
15	56.44	Di-n-octyl phthalate	DNOP
16	56.44	Dinonyl phthalate	DNP

Time (min)	Phase A: Water	Phase B: 100% acetonitrile
0	60	40
14	42	58
35	30	70
45	0	100
55	0	100
56	60	40

## Applications in the feed industry (amino acid analysis)



Sample Name: Amino acid standards  
 Chromatographic column: EXFORMMA, 5µm, 4.6 x 250mm;  
 Flow rate: 1.0mL/min  
 Column temperature: 40°C  
 Wavelength: 254nm  
 Injection volume: 5µL  
 Mobile phase: A: 0.1 mol/L sodium acetate solution (pH 6.5); acetonitrile = 93:7  
 B: Water:acetonitrile=20:80

### Gradient mode

T(min)	A%	B%
0.01	100.0	0.0
11	93.0	7.0
13.9	88.0	12.0
14	85.0	15.0
29	66.0	34.0
32	30.0	70.0
35	0.0	100.0
42	0.0	100.0
45	100.0	0.0
60	100.0	0.0

1 Methanamine 2 glutamic acid 3 serine 4 glycine 5 histidine 6 arginine 7threonine 8alanine 9 proline 10tyrosine  
 11 valine 12 methionine 13 cystine 14 isoleucine 15 leucine 16norleucine 17 phenylalanine 18lysine