



SHINE 盛瀚

SHINE

CIC-D160+ Introduction



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Configuration List

Standard Configuration		
No.	Items	Quantity
1	Ion chromatograph host	1
2	High-pressure double plunger advection pump	1
3	Conductivity detector	1
4	Anion column	1
5	Anion guard column	1
6	Anion suppressor	1
7	Chromatography software	1
8	Column heater	1
9	PEEK flow path	1
10	Online gas-liquid separator	1
11	Spare parts kits	1
12	Vacuum degassing pump	1
13	Sand core filtration device	1
14	0.22um syringe filter	100
15	Built-in anion eluent generator	1

Q&A:

1. Software is English version.
2. Instrument Power supply: AC110-240V,50Hz/60Hz
3. We offer cables as per local requirements.
4. With standard configuration, it is possible to work.
5. Reagent and chemical standard is not included, due to overseas transportation restrictions.

Optional Configuration

Items	Pictures	Why choose them?
Ultrapure water purifier SU-20		Type 1 water is necessary for IC analysis.
Autosampler SHA-18i		<ol style="list-style-type: none">1. Save labor2. Increase analysis efficiency3. 2ml*120vials, closed autosampler
Electrochemical detector SHE-8		Possible to analyze carbohydrate
UV Post-Column Derivation Device		<ol style="list-style-type: none">1. Always needed before UV-VIS detector
UV-VIS Detector		<ol style="list-style-type: none">1. UV-VIS detector is available for analysis of Hexavalent Chromium in toys, Bromate in water at 0.5ppb level, etc.

Worry-free Maintenance

Component	Pictures	Quantity	Suggested replacement	Component	Pictures	Quantity	Suggested replacement
Eluent filter		2	1 year	EG trap column		1	2 years
Pump maintenance kit		4	2 years	KOH Cartridge		1	1 ~2 years
Stator rotor of six way valve		2	2 years	Suppressor		1	1 ~2 years
Guard column		1	1 year				
Analysis column		1	1 ~2 years				

Features



Eluent sensor(Hidden)



Leakage sensor

Intelligent reminder



Wait



Error



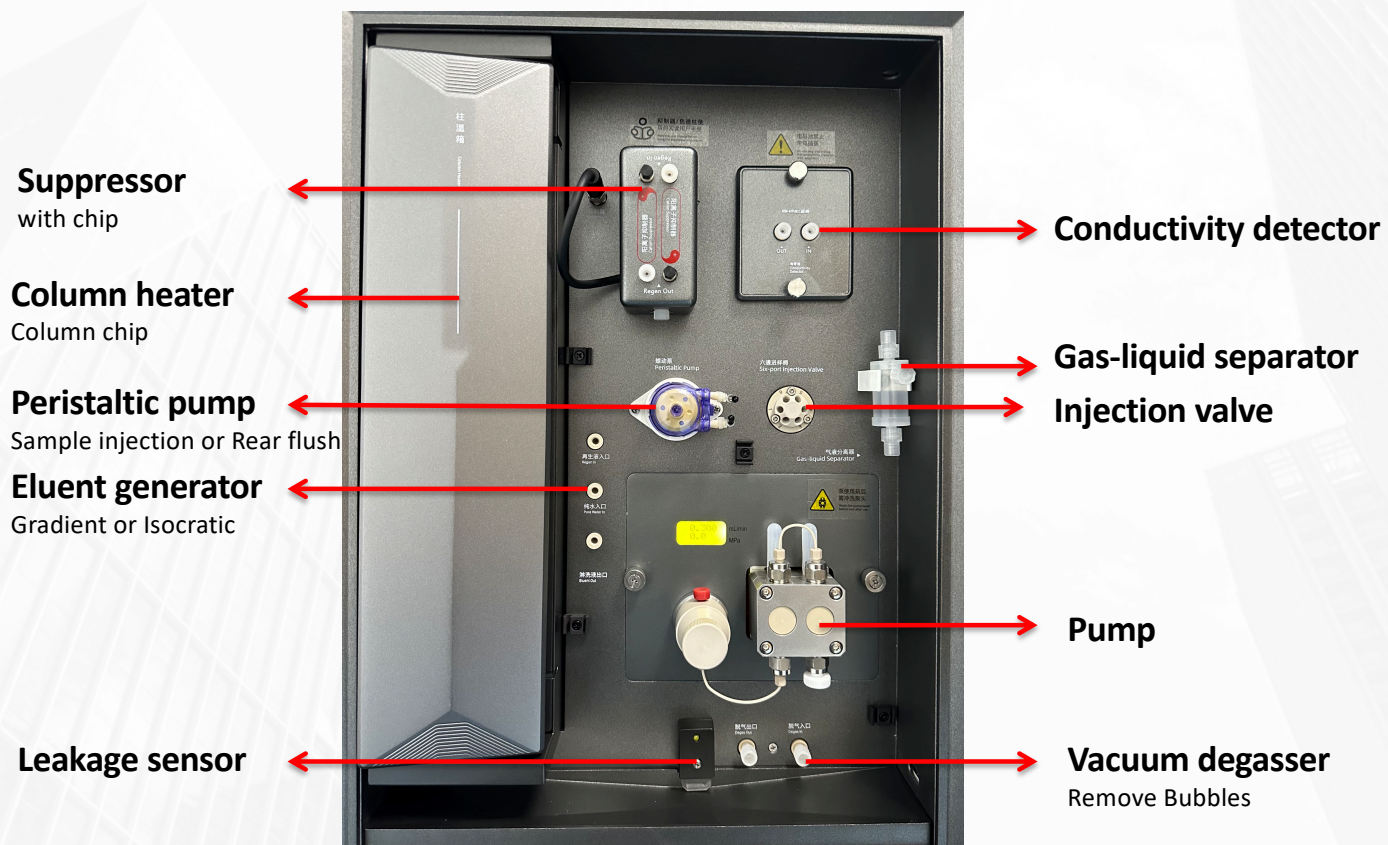
Operating

Features



30 seconds of automatic sampling, after completion, the automatic switching valve starts detection

Features



Features

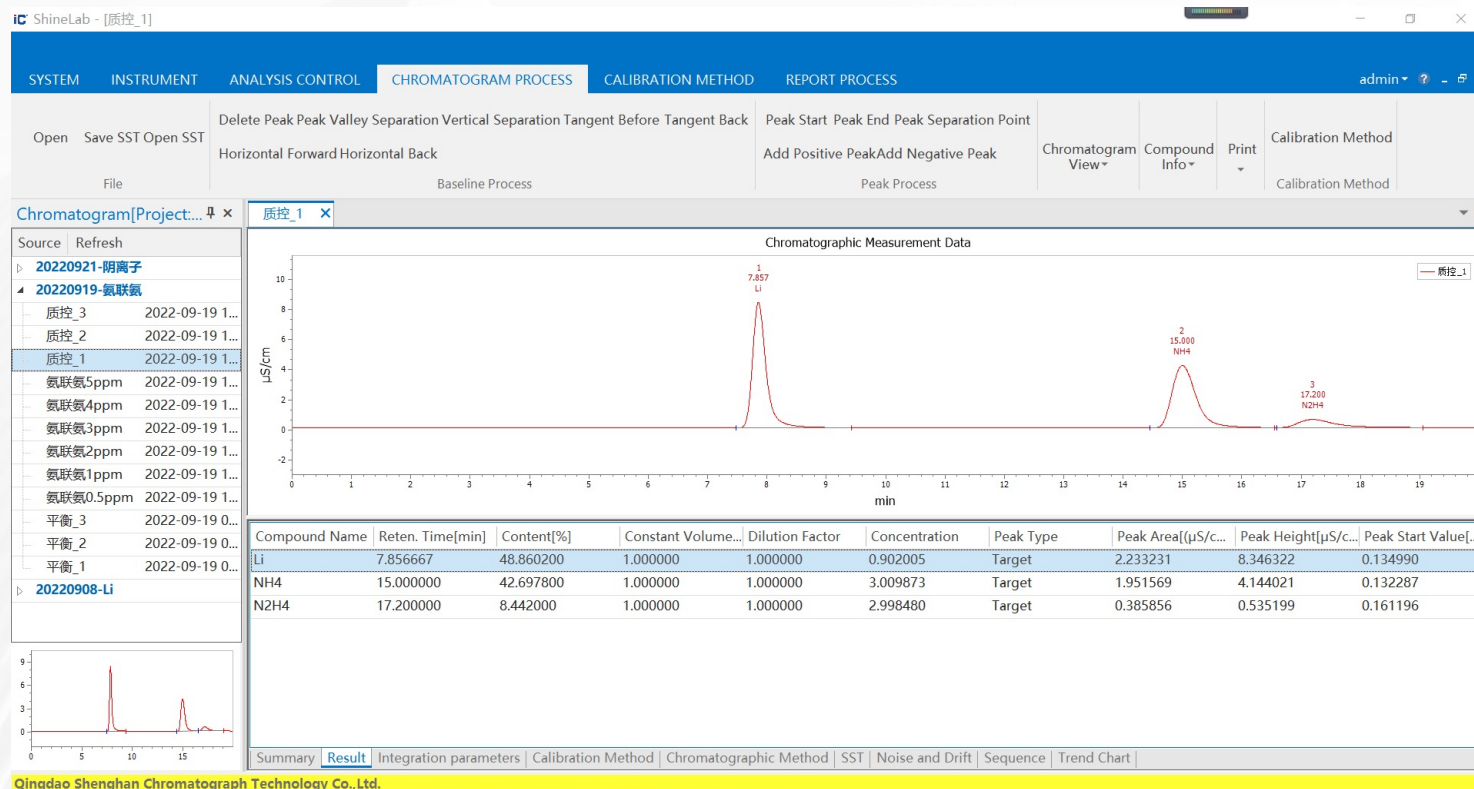


Separation of liquids and circuits
Protect system



Outside and inside, Special design, more convenient maintenance

Advantages - ShineLab



1. ShineLab is self-developed software, we offer free-update for the whole use cycle.

2. 21 CFR Part 11 Compatible.

3. Pharmaceutical Enterprise Edition software is optional.

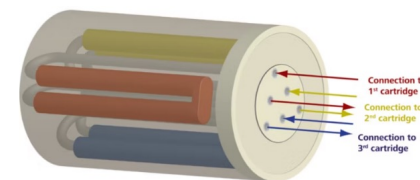
Advantages - Suppressor

		SHINE	Metrohm	Thermo(Dionex)
Suppressor	Max Pressure	6MPa	2.5Mpa	
	Void Volumes	<40 μ L (4mm) <15 μ L (2mm)	< 250 μ L	Dionex CDRS 600 (4 mm) < 50 μ L Dionex CDRS 600 (2 mm) < 15 μ L
	Suppression capacity (μ eq/min)	200 (Anion) 100 (Cation)	MSM-HC C > 50 min* (0.25 meq)	Dionex CDRS 600 (4 mm) 100 μ eq/min Dionex CDRS 600 (2 mm) 35 μ eq/min
	Principle	Membrane suppressor	Columnar suppressor	Membrane suppressor

Why we choose membrane suppressor?

Suppressor contrast

Comparison item	Columnar suppressor	Continuous automatic regeneration electrolytic membrane suppressor
Inhibition mechanism	Ion exchange mechanism Capture counterion Utilize	electrolyzed water and ion selective membrane principle
Chemical Regeneration	Requires Extra Pumps and Hand Recycling	Does Not Require Pumps or Regeneration Liquids, Automatic Electrolysis Continuous Regeneration
Weak acid anion recovery and stability	Weak acid (such as nitrite) recovery is low, the recovery of the stability of the poor	whether strong or weak acid anion are stable and maintain a high recovery
Anion suppression function	Poor compatibility with hydroxide systems	Compatible with all common anionic eluents such as carbonate systems, hydroxide systems, borate systems
Cation suppression function	not many successful application examples	For sulfuric acid, methanesulfonic acid and other systems
Suppressor capacity and gradient compatibility	Regular regeneration or replacement is required. During gradient elution, the baseline drift is obvious	Can achieve continuous automatic regeneration function, compatible with gradient elution, to improve the baseline drift
Suppressor dead volume	Larger, will cause the peak broadening.	Smaller, smaller post-column dead volume
Test results reproducibility	Inhibit the use of column rotation, can not ensure the continuity of the state of retention time and peak area reproducibility	The same suppressor is used for both standard solutions and samples, with reproducible results
Sulfate residue	Requires the use of sulfuric acid for on-line or off-line regeneration, thus inhibiting the column will remain and release 50 μ g / L of sulfate, not suitable for trace analysis	No need to use sulfuric acid as regenerant, so there is no sulfuric acid residue problem

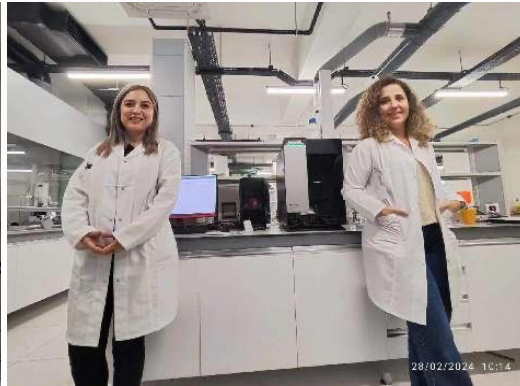
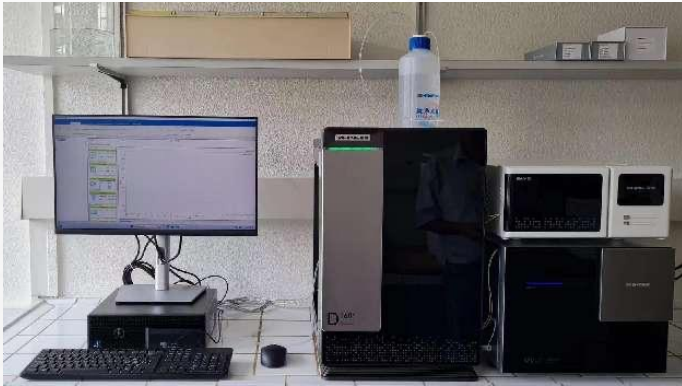


Columnar suppressor

Advantages - Conductivity Detector

		SHINE CIC-D160+	Metrohm 930	Thermo(Dionex) Integrion
Conductivity detector	Max Pressure	42 MPa	35 MPa	41MPa
	Flow Range (mL/min)	0.001-9.999	0.001 -20	0.00-10.000
	Pressure Display Accuracy	≤0.1MPa		
	Pressure Pulse	≤0.5%	<1%	<1%
	Flow Precision	≤0.1%		<±0.1%
	Stability of Flow	≤0.3%		

Installation Pictures



Certificate - CE & ISO

CERTIFICATE of Conformity
Low Voltage Directive (EU) 2014/35

Registration No.: AN 50611698 0001
Report No.: CN2350NT 001
Holder: Qingdao Shenghan Chromatograph Technology Co., Ltd.
No.151, Zhuzhou Road, Laoshan District, Qingdao Shandong P.R. China
Product: Chromatograph (Ion Chromatograph)

Type designation listed on the next page
This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the License Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive (EU) 2014/35, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

Date: 2023-12-06

Certification Body
Xiao Feng

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with. CE

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TÜV Rheinland® Precisely Right.

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CERTIFICATE of Conformity
Low Voltage Directive (EU) 2014/35

Registration No.: AN 50611698 0001
Product: Chromatograph (Ion Chromatograph)

Identification:
Type Designation: CIC-0138+ CIC-0168+ (SHDE)
Serial No.: Engineering sample
Remark: Refer to test report CN2350NT 001 for details.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives/Regulations are complied with. CE

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CERTIFICATE OF CONFORMITY
QUALITY MANAGEMENT SYSTEM CERTIFICATION

NO. 1042401598R4M

This is to certify that the Quality Management System of QINGDAO SHENGHAN CHROMATOGRAPH TECHNOLOGY CO., LTD. (Registered Address: Rui 108, Building 1, No.151 Zhuzhou Road, Laoshan, Qingdao, Shandong Audit Address: No.151 Zhuzhou Road, Laoshan, Qingdao, Shandong Unity Social Credit Code:913702127071247 Postal Code:266001) is in conformity with:

GB/T 19001-2016/ISO 9001:2015

This system is valid to:

* INDEPENDENT RESEARCH, DEVELOPMENT AND PRODUCTION OF CHROMATOGRAPHY, SPECTROM, MASS SPECTROMETER AND KEY COMPONENTS *

Further clarifications regarding the scope of this certificate and the applicability of GB/T 19001-2016/ISO 9001:2015 requirements may be obtained by this body organization. Certificate in the state regulation administrative license, qualification, mandatory product certification received within the validity period, the regular supervision review of the case effectively. This certificate information is available on the official website of the agency and Certification & Accreditation Administration of the People's Republic of China (www.cnca.gov.cn).

Issue date: 08-30-2024 Term of validity: 08-30-2024 TO 08-29-2027

Representative of the company (Director): S.p. chuan

IAF CNAS CHINA CERTIFICATION CENTER MANAGEMENT SYSTEM CNAS C104-M

CERTIFICATE OF CONFORMITY
ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATION

NO. 1042401010R1M

This is to certify that the Environmental Management System of QINGDAO SHENGHAN CHROMATOGRAPH TECHNOLOGY CO., LTD. (Registered Address: Rui 108, Building 1, No.151 Zhuzhou Road, Laoshan, Qingdao, Shandong Audit Address: No.151 Zhuzhou Road, Laoshan, Qingdao, Shandong Unity Social Credit Code:913702127071247 Postal Code:266001) is in conformity with:

GB/T 24001-2016/ISO 14001:2015

This system is valid to:

* INDEPENDENT RESEARCH, DEVELOPMENT AND PRODUCTION OF CHROMATOGRAPHY, SPECTROM, MASS SPECTROMETER AND KEY COMPONENTS AND RELATED OHS MANAGEMENT ACTIVITIES BY QINGDAO SHENGHAN CHROMATOGRAPH TECHNOLOGY CO., LTD. LOCATED AT NO.151 ZHIZHOU ROAD, LAOSHAN, QINGDAO, SHANDONG *

Further clarifications regarding the scope of this certificate and the applicability of GB/T 24001-2016/ISO 14001:2015 requirements may be obtained by this body organization. Certificate in the state regulation administrative license, qualification, mandatory product certification received within the validity period, the regular supervision review of the case effectively. This certificate information is available on the official website of the agency and Certification & Accreditation Administration of the People's Republic of China (www.cnca.gov.cn).

Issue date: 08-30-2024 Term of validity: 08-30-2024 TO 08-29-2027

Representative of the company (Director): S.p. chuan

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CERTIFICATE OF CONFORMITY
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM CERTIFICATION

NO. 1042400910R1M

This is to certify that the Occupational Health And Safety Management System of QINGDAO SHENGHAN CHROMATOGRAPH TECHNOLOGY CO., LTD. (Registered Address: Rui 108, Building 1, No.151 Zhuzhou Road, Laoshan, Qingdao, Shandong Audit Address: No.151 Zhuzhou Road, Laoshan, Qingdao, Shandong Unity Social Credit Code:913702127071247 Postal Code:266001) is in conformity with:

GB/T 45001-2020/ISO 45001:2018

This system is valid to:

* INDEPENDENT RESEARCH, DEVELOPMENT AND PRODUCTION OF CHROMATOGRAPHY, SPECTROM, MASS SPECTROMETER AND KEY COMPONENTS AND RELATED OHS MANAGEMENT ACTIVITIES BY QINGDAO SHENGHAN CHROMATOGRAPH TECHNOLOGY CO., LTD. LOCATED AT NO.151 ZHIZHOU ROAD, LAOSHAN, QINGDAO, SHANDONG *

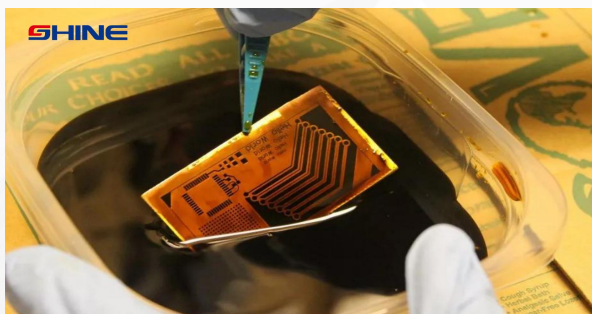
Further clarifications regarding the scope of this certificate and the applicability of GB/T 45001-2020/ISO 45001:2018 requirements may be obtained by this body organization. Certificate in the state regulation administrative license, qualification, mandatory product certification received within the validity period, the regular supervision review of the case effectively. This certificate information is available on the official website of the agency and Certification & Accreditation Administration of the People's Republic of China (www.cnca.gov.cn).

Issue date: 08-30-2024 Term of validity: 08-30-2024 TO 08-29-2027

Representative of the company (Director): S.p. chuan

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Typical Applications



Detection of chloride in copper etching solution

Introduction:

Copper etching solution is a chemical liquid mainly used for etching copper in printed circuit boards, and is also widely used in copper crafts, printed circuit board manufacturing, copper cleaning, and copper label production. The concentration of ammonium chloride has a significant impact on the etching rate, and an appropriate amount of ammonium chloride can improve the etching rate and solution stability. In this study, an ion chromatograph was used to detect the chloride content in copper etching solution.

Table 1: Detection items

Anion | Chloride

Keywords: Copper etching solution, Chloride, Ion Chromatograph.

Instruments and equipment

- Ion chromatograph: CIC-D160*
- Autosampler: SHA-18i
- Ultra pure water machine: EU-20

Qingdao Shenghan Chromatograph Technology Co., Ltd



More information, Please visit our website:
<http://www.sheng-han.net/>
Serial number:090

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Requirements

Reagents

Unless otherwise specified, all reagents used are superior grade. Commercially available certified standard solutions for chloride (1000 mg/L).

Ultra pure water

When preparing standard samples manually or diluting real samples, please use ASTM filtration and deionization requirements that meet the specifications listed in the table 2.

Table 2: Ultra pure water specification.

	Specification
Ion Resistivity	≥18.25MΩ·cm
Organics-TOC	<10ppb
Iron/Transition Metals	<1ppb
Pyrogens	<0.03EU/mL
Particulates (>0.2μm)	<1unit/mL
Colloids-Silica	<10ppb
Bacteria	<1cfu/mL

Chromatography conditions

Table 3: Analysis conditions

Instrument	CIC-D160*
Eluent	0-15min 5 mM KOH 15-140min 40 mM KOH 40-1.45min 5 mM KOH
Flow rate	1.0 mL/min
Injection volume	10 μL
Analytical column	SH-AP-1
Column oven temperature	35℃
Conductivity detector temperature	35℃
Suppressor current	120 mA

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Sample preparation

The sample is directly passed through a Na on-guard column, then through a 0.22 μm filter membrane, and then injected for analysis.

Standard chromatogram

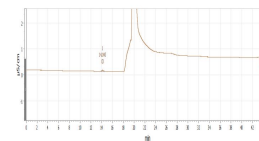


Figure 1. Chromatogram of standard

Table 4: Standard sample result.

Ions	Time(min)	Concentration [mg/L]	Area [(μS/cm)·min]
Cl-	14.14	0.1	0.01377

Sample chromatogram

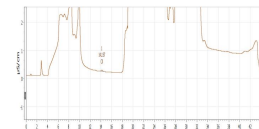


Figure 2. Chromatogram of sample

Results and calculations

Table 5: Sample test result (Unit: mg/L)

Sample	Cl
1#	0.121

Note: There may be differences in test results between different methods and laboratories

Feasibility analysis and conclusion

The above experiments prove that the detection method has good resolution and is suitable for the determination



of the content of the components to be measured in the sample.

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Typical Applications



Determination of total fluorine content in plastics

Introduction:

Fluoroplastics refer to plastics made of fluororesin. The main varieties include polytetrafluoroethylene, tetrafluoroethylene ethylene copolymer, tetrafluoroethylene hexafluoropropylene copolymer, and trifluoroethylene ethylene copolymer. Because the molecular structure of fluoroplastics contains fluorine atoms, it has many excellent properties, such as excellent electrical insulation, high heat resistance, outstanding oil resistance, solvent resistance and abrasion resistance, good moisture resistance and low temperature resistance. Therefore, fluoroplastics play an important role in industrial sectors such as national defense, electromechanical, metallurgical, and petrochemical industries. This article introduces the determination of total fluorine content in plastics by ion chromatography combustion method.

Detection items (Table 1):

Anion	F ⁻
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Keywords: Ion chromatography, Fluorine, Plastic

Instruments and equipment

- Ion chromatograph: CIC-D160*
 - Ultra pure water machine: ECO-S15
- Qingdao Shenghan Chromatograph Technology Co., Ltd



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Requirements

Reagents

Unless otherwise specified, all reagents used are superior grade. F standard solution (1000 mg/L)

Deionized Water

When preparing standard samples manually or diluting real samples, please use ASTM filtration and deionization requirements that meet the specifications listed in the table 2.

Table 2: Deionized water specification.

Specification	
Ions Resistivity	≥18.25MΩ·cm
Organics-TOC	<10ppb
Iron/Transition Metals	<1ppb
Pyrogens	<0.03EU/mL
Particulates (>0.2µm)	<1unit/mL
Colloids-Silica	<10ppb
Bacteria	<1cfu/mL

Chromatography conditions:

Table 3:

Instrument	CIC-D160*
Eluent	15 mM KOH
Flow rate	0.7 mL/min
Injection volume	25 µL
Analytical Column	SH-AP-1
Column oven temperature	35 °C
Conductivity cell temperature	35 °C
Suppressor current	45 mA

Sample preparation

Weigh a proper amount of sample, conduct oxygen bomb combustion, transfer the absorption solution to a 100 mL volumetric flask, shake it up and pass 0.22 µ Disposable needle filter for ion chromatography testing.

Table 4:

Sample	Weight (g)	Volume(mL)
1#	0.1090, 0.1160	100.00

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Serial number: 032

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2#	0.1062, 0.1040	100.00
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Standard chromatogram

Standard chromatogram, As shown in below:

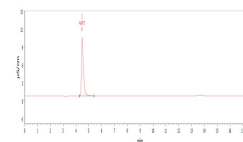


Figure 1. Chromatogram of standard sample.

Blank chromatogram

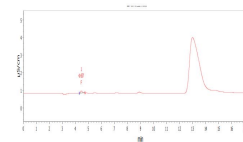


Figure 2. Chromatogram of blank

Sample chromatogram

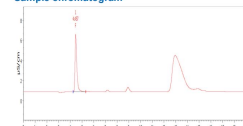


Figure 3. Chromatogram of sample 1#

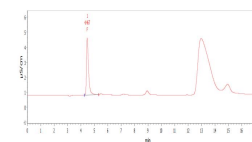


Figure 4. Chromatogram of sample 2#

Results and calculations

Table 5: Sample test result (mg/kg)

Sample	F ⁻
1#	1123
2#	721.3

Remarks: ① Blank space has been deducted from the test results; ② There may be differences in testing results between different methods and laboratories.

Feasibility analysis and conclusion





The above experiments prove that the detection method has good resolution and is suitable for the determination of the content of the components to be measured in the sample.

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Estimated Service Life

More Than 15 Years

							
	CIC-D100	CIC-D120+	CIC-D160+	CIC-D300+	CIC-D150	CIC-D180	CIC-D260
Channel	Single	Single	Single	Double	Single	Single	Double
Pump	✓	✓	✓	✓	✓	✓	✓
Vacuum degassing pump	✓	✓	✓	✓	✓	✓	✓
Suppressed Conductivity	✓	✓	✓	✓	✓	✓	✓
Injection Valve	✓ (Manually)	—	✓ (Automatically)	✓ (Automatically)	✓ (Automatically)	✓ (Automatically)	✓ (Automatically)
Autosampler	+	✓	+	+	+	+	+
Eluent Generator	+	+	✓ (Anion EGC)	✓ (Anion EGC&Cation EGC)	+	✓	+
On-line Degassing Device	+	✓	✓	✓	✓	✓	✓
Chemical Conductivity	+	+	+	+	+	+	+
Electrochemical Detector	+	+	+	+	+	+	+
UV-VIS Detector	+	+	+	+	+	+	+
UV Post-Column Derivation Device	+	+	+	+	+	+	+
Carbon dioxide removal device	+	+	+	+	+	+	+
					✓ Standard	+Optional	—Unavailable



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Thank you

Believe in the power of faith

