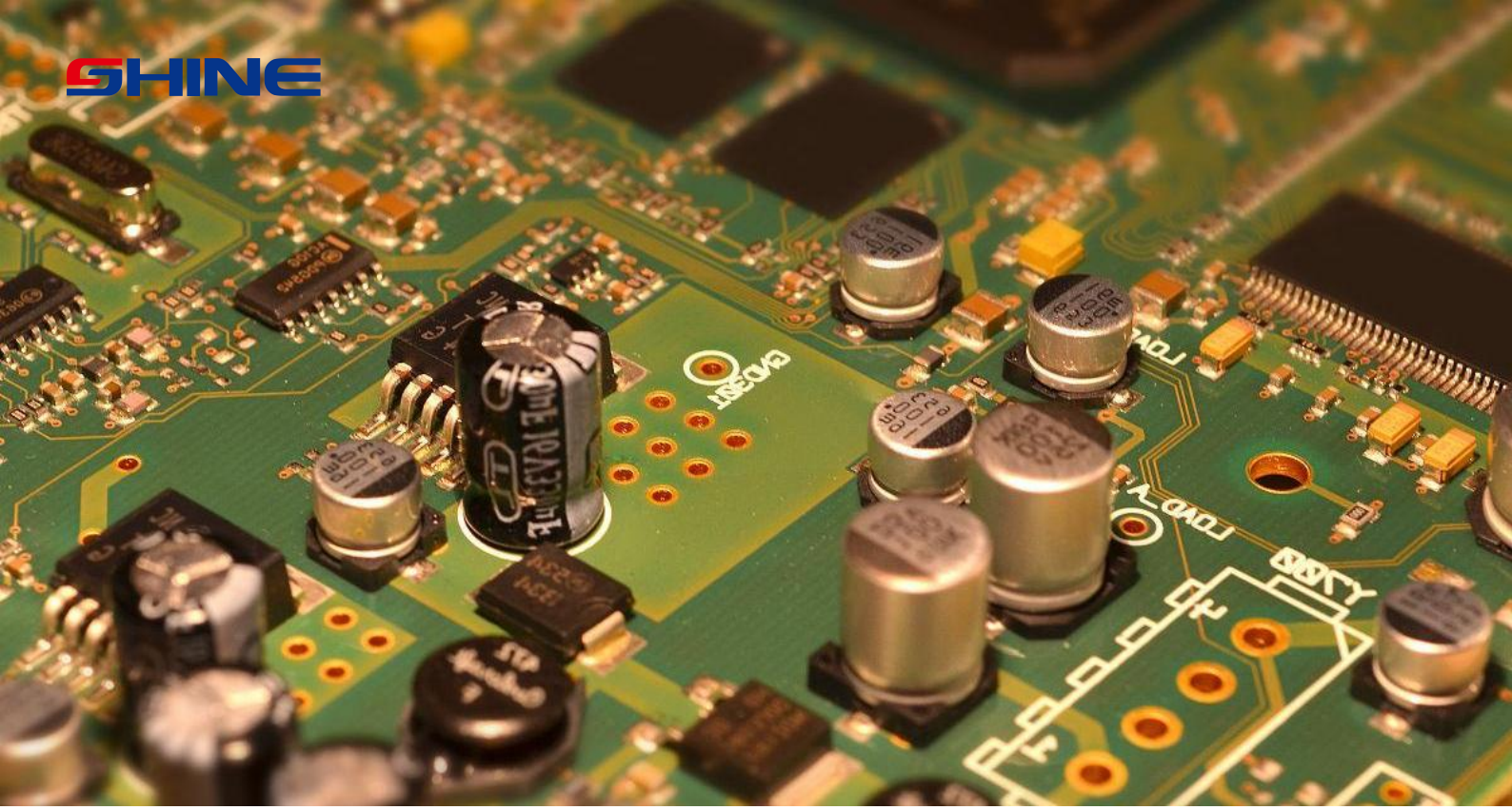

Determination of chloride in capacitor shells

Introduction:

With the advent of the electronic information age, the application of electronic products in daily life has become a common phenomenon. For example, what many people are unaware of, such as common mobile phones and brains, is that some electronic components contain chloride ions. For electronic products, this is a harmful substance that can cause certain harm. Because chlorine is a highly mixed substance with non gold activity, the presence of chloride ions on electronic components and the potential of ion electrodes formed by water compounds in lake gas can ionize metals and cause damage to electronic products.

Detection items (Table 1):

Anion	Cl^-

Keywords: Ion chromatography, Chloride, Electronic components

Instruments and equipment

- **Ion chromatograph**: CIC-D180
- **Autosampler**: SHA-18
- **Ultra pure water machine**:ECO-S15

Qingdao Shenghan Chromatograph Technology Co., Ltd

Requirements

Reagents

Unless otherwise specified, all reagents used are superior grade. Cl^- anions 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 (Anions):

Table 3: Anions analysis conditions

Instrument	CIC-D180
Eluent	13 mM KOH
Flow rate	0.7 mL/min
Injection volume	25 μL
Analytical Column	SH-AP-1
Column oven temperature	35℃
Conductivity cell temperature	35℃
Suppressor current	30 mA

Sample preparation

Using an oxygen bomb combustion device, after the sample is burned and treated, the inner wall is cleaned with 20 mL of pure water and directly tested on the IC. Simultaneously perform a blank control of cleaning water.

Standard chromatogram

Standard chromatogram, As shown in below:

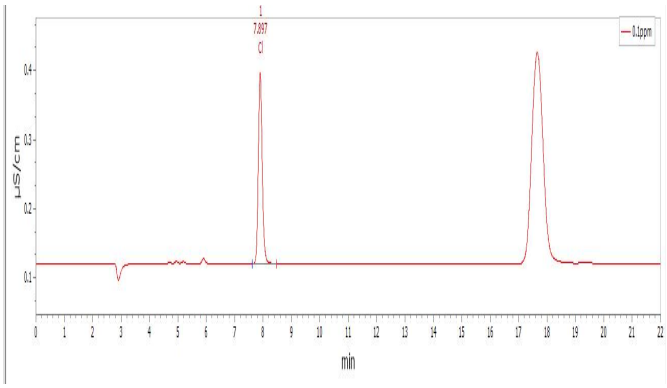

Figure 1. Chromatogram of standard sample.

Blank chromatogram

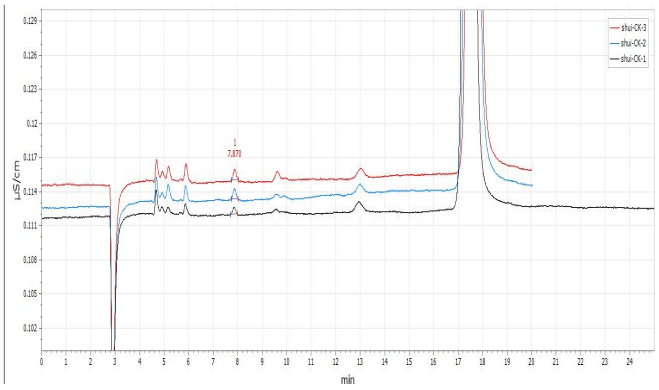

Figure 2. Chromatogram of blank

Sample chromatogram

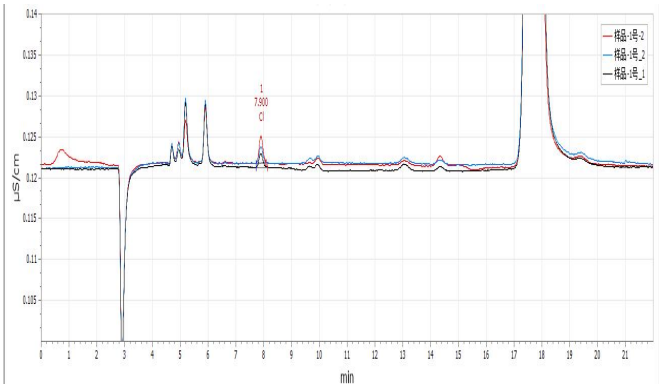

Figure 3. Chromatogram of sample 1#

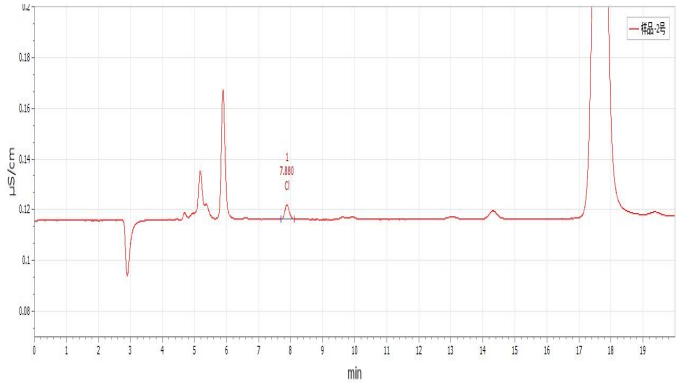

Figure 4. Chromatogram of sample 2#

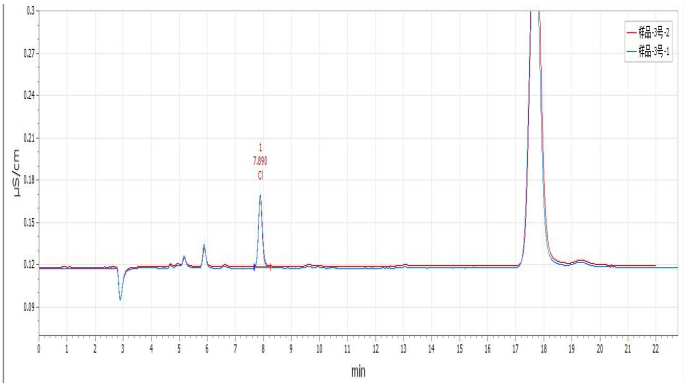

Figure 5. Chromatogram of sample 3#

Results and calculations

Table 4: Sample test result (Anions)

No	Concentration mg/L	Blank mg/L	Result mg/L	Average mg/L
1#	0.000586	0.000171	0.000415	0.000445
	0.000644		0.000473	
1#	0.001132		0.000961	0.000961
2#	0.001846	0.000264	0.00158	0.00158
3#	0.018241	0.000337	0.017904	0.0179
3#	0.018142		0.017805	

Remarks: ① The measured value has been deducted from the blank value; ② There may be differences in testing results between different methods and different 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.