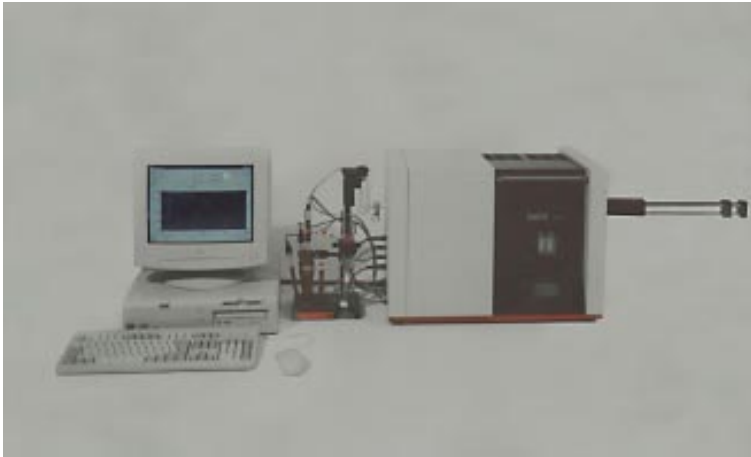


CI 10

Coulometric Determination of AOX, EOX, POX and AOS





Behr CI 10

Coulometric determination of organohalogen compounds in aqueous media

Due to their excellent chemical and technical properties, organohalogen compounds are employed in vast quantities throughout the world. They find application as

- Germicides
- Pesticides
- Preservatives
- Solvents, diluents and extraction agents
- Plasticizers, stabilizers and insulators
- Medications
- Plastics
- Refrigerants and fire extinguishing agents

Nonetheless, organohalogen compounds are generally resistant to rapid microbiological

breakdown in the environment and exhibit moderate to pronounced toxicities to various species. They consequently represent an increasing environmental hazard, since they are not only widely disseminated through natural aquatic systems, but volatile organohalogens are also transported through the atmosphere.

The principal methodology in current use for verification of the effectiveness of biological degradation and water purification treatment is the determination of the cumulative halogen or sulfur content as:

- AOX/EOX
- POX
- AOS

The Behr CI 10 automatic analysis system for the coulometric determination of organohalogens in aqueous and solid matrices consists of the following components:

- Combination furnace, consisting of a sample input port, temperature-programmable infrared furnace and a tandem downstream reduction furnace.
- Microcoulometric titration cell.
- Electronic micro-processor controller. The furnace unit and control module are assembled together to form the analyzer unit.
- PC with Windows-software for data input/output and real time system monitoring.

Optional accessories:

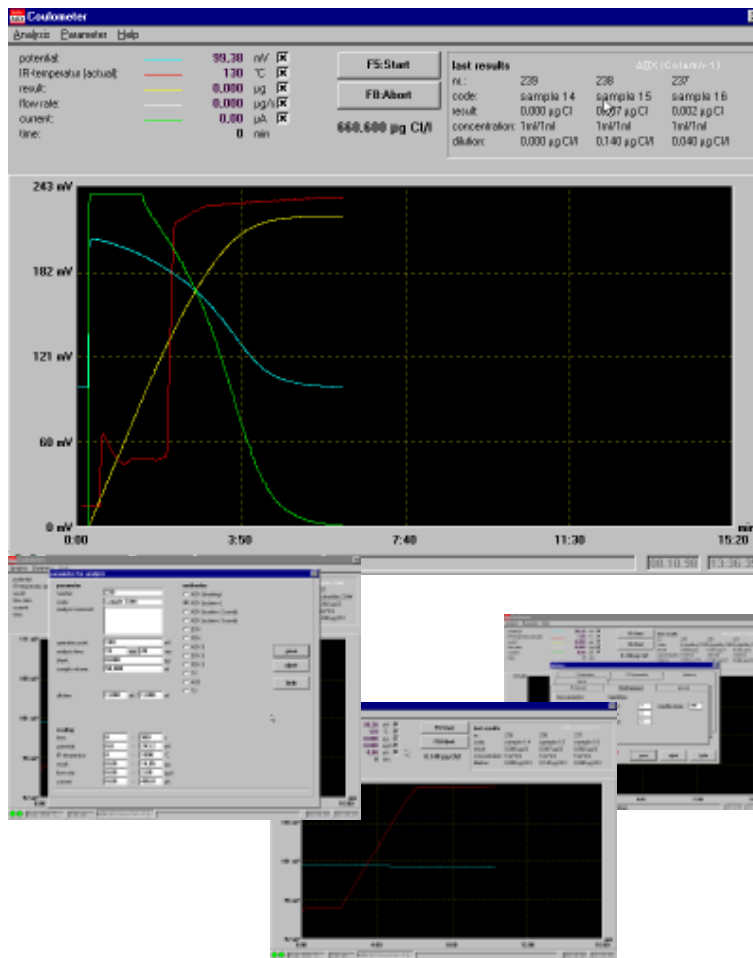
- EOX injector
- EOX und AOX autosampler
- POX thermostat

+ Analytical Advantages

Superb precision and accuracy through use of microcoulometric titration with potentiometric end-point detection, an absolute method, requiring no calibration.

Controlled drying and combustion are optimized in the programmable IR furnace. Freely selectable temperature function sequencing permits fixed sample positioning in the furnace.

Any elemental chlorine produced during sample combustion is converted, with 100 % efficiency, to detectable HCl in the downstream reduction furnace.



+ One Analyzer for a Variety of Determinations

AOX: Optional pressure filtration unit for activated charcoal column preparation available.

EOX: Syringe injection for single samples. Optional autosampler offers accuracy, precision and convenience for multiple samples.

POX: Thermostated purging.

AOS: AOS determination with simple change of electrode.

+ Operation by means of Windows™ Software

Runs under Microsoft® Windows™.

Self-explanatory menus and information entry fields provide for simple and comprehensible input of analytical parameters and for operation of the instrumentation.

Real time display of titration parameters including furnace status as graphic and text monitor output.

Single software packet as

delivered supports analysis of AOX, EOX, POX, AOS and TX.

Throughout the analysis the following parameters are displayed as functions of time:

- Starting electrode potential
- Instantaneous electrode potential
- Titration current
- Cumulative mass of chloride
- Instantaneous mass transport rate of halogen into the titration cell



+ The Behr CI 10 Furnace Unit

Programmable IR furnace (patent pending) in tandem with a downstream reduction furnace. Capable of heating from room temperature to 1000 °C in 10 seconds. Heating cycle may be programmed to include

up to five freely selectable temperature intervals. Rapid cooling without circulating water is achieved by "heat pipes". IR furnace operates to 1150 °C, reduction furnace in the range 20 ... 1000 °C. Sample port shielded by continuous flow gas curtain. Temperature programmability obviates need to reposition sample within furnace.

Technical Specifications

Analytical ranges	AOX/EOX/POX: AOS:	0,1 ... 300 µg Cl ⁻ absolute 0,2 ... 300 µg S absolute
Display resolution:		0,01 µg Cl ⁻ absolute
Precision:		< 1 % relative
Duration of analysis (e.g. AOX):		5 min (with 10 mg Cl in sample)
Electronic Signal Processing:		Patented preamplifier mounted directly on electrode ensures low interference accurate potential determination. Resolution 5 mV
Titration current:		256 levels spanning range of 0.1 ... 450 µA
Electrolyte volume:		5 ... 20 ml
Sample volume/mass	AOX/POX: EOX: Solid samples:	max. 100 ml 10 ... 500 µl injection volume max. 5 g
Two-stage Furnace Unit:		<ol style="list-style-type: none"> 1) Programmable IR furnace with extremely rapid heating/cooling rates. Patent pending "heat pipes" cool without water circulation. Max. temperature 1150 °C. Up to 5 programmable temperature gradient intervals. 2) Tandem downstream reduction furnace for quantitative conversion of Cl₂ to HCl. Constant temperature selectable 20 ... 1000 °C.
Operating gases:	O ₂ : Ar:	Technical grade 99,996 %
Power requirements:		230 V, max. 2,4 kVA including furnace 10 VA in stand-by operation with computer & monitor turned off
Dimensions (H x W x D in mm):		Approx. 440 x 1035 x 370 for analyzer unit with AOX sample input port, excluding PC & monitor. Approx. 430 x 285 x 180 for titration cell unit.