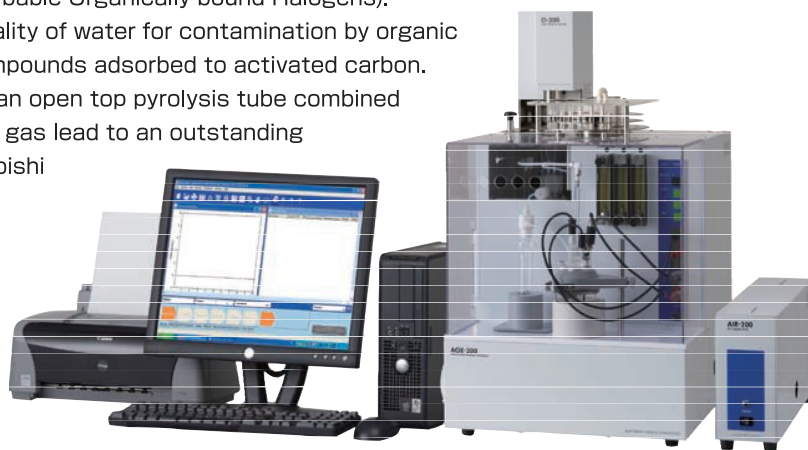


Adsorbable Organic Halogen Analyzer AOX-200



DIA Instruments/Mitsubishi Chemical is pleased to introduce an epoch making new instrument: AOX-200 dedicated to the analysis of AOX (Adsorbable Organically bound Halogens). Method of AOX analysis is used to assess the quality of water for contamination by organic halides by measuring organic Cl, Br and Iodine compounds adsorbed to activated carbon. The ease of operation achieved by combustion in an open top pyrolysis tube combined with low running costs by using air as combustion gas lead to an outstanding performance of AOX-200. DIA Instruments/Mitsubishi Chemical has a perfect line up for the analysis of AOX in drinking water, surface water and sludge.



Features

Open top pyrolysis combustion provides unique features.

- ✓ Easy automation.
- ✓ Gas leakage almost impossible as mass flow is provided by suction not by overpressure.
- ✓ No sealings on pyrolysis tube.
- ✓ No flush back of sulfuric acid.
- ✓ No heated transfer tubes.
- ✓ No needed on sample inlet port.

No gases required for combustion except air.

- ✓ Cost saving as no external gas is required: 50%-75% of initial investment costs are additionally spend on gases on conventional products.
- ✓ Independent operation. (No gas connection is required.)

Acetic acid destruction keeps atmosphere clean.

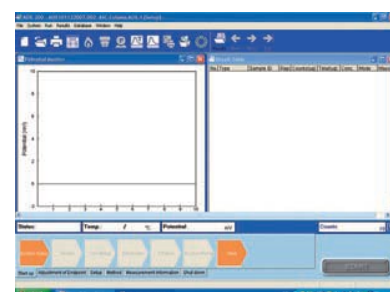
- ✓ No exposure to toxic acetic acid vapor.
- ✓ No inconvenience due to smell of acetic acid.

Small foot print (<50cm width)

- ✓ No extensive use of lab space.
- ✓ Easy to move.
- ✓ Easy to maintain.
- ✓ Easy to check mechanical and electrical components.

Exclusive new software

- ✓ Easy single point control
- ✓ Operation by drop down menus, by intuition using icons or educated by interactive guide menus



Universal automation for batch and column method by built-in sampler : FI-200

- ✓ Frit auto sampler included in standard configuration.
- ✓ Frit auto sampler capable to operate Column and Frit / batch method.
- ✓ Capable for using carbon introduced to frit.

Auto sampler for column method : CI-200

- ✓ Column Auto sampler with direct injection of pure activated carbon columns without any container. (Patent Applied)
- ✓ High capacity of the pyrolysis tube for activated carbon columns burned on the system. (max. 300 Shots.)
- ✓ Autosamplers with rigid and robust construction.(no complicated laser driven position finding mechanisms)
- ✓ Easy to change auto samplers.

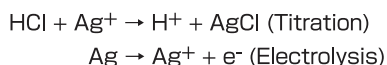
Adsorption module for batch method using ceramic frits : SA-200

- ✓ Rigid Ceramic frits developed for a long life and strong against destruction.

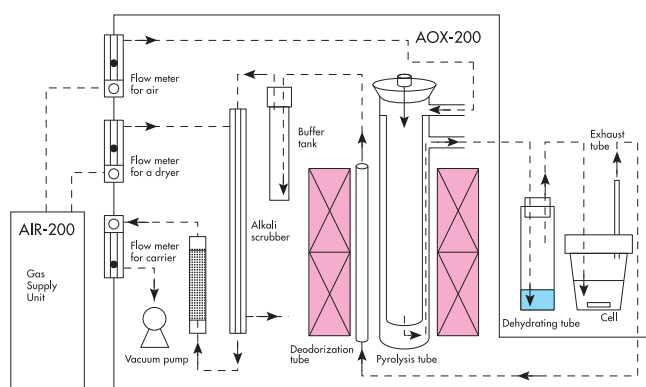
Measurement Principal

AOX adsorbed to activated carbon is pyrolyzed in a quartz combustion tube. Combustion gases containing hydrogen halides are forced through a dehydrating tube and subsequently adsorbed within the electrolyte of a coulometric titration cell.

Within the titration cell the halogen ions are quantified by an argentometric coulometry. The amount of chlorine is calculated from the quantity of electricity required for the formation of silver ions.



The gas is moved by application of a suction pump. This principle is used to destroy acetic acid vapour by returning the gases through a separate combustion tube within the furnace after passage of titration cell.



Official Method

◆ISO 9562, DIN EN 1485

- Water quality-determination of adsorbable organic halogens (AOX)

◆EPA 9020

- Total organic halides (AOX-Column method)
- ICR [EPA 814-B-96-002 for QC]

◆DIN38414 part 18

- Sludge and Sediment-Determination of adsorbed organically bound halogens (AOX-Batch method)

Application

●Column method (AOX-2)








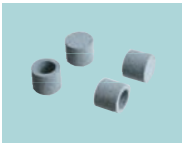
Sample	Sample volume	No of measurement	Count (μg)	Recovery (%)	RSD(%)
Activated carbon (with prepacked column)	blank	2	0.251	–	–
0.1ppm TCP (with prepacked column)	10ml	8	1.225	97	2.37

●Batch method (AOX-Batch)

Sample	Sample volume	No of measurement	Count (μg)	Recovery (%)	RSD(%)
Activated carbon	blank	2	0.403	–	–
1ppm chlorophenol	10ml	4	10.578	102	4.64

Options

System configuration

	Adsorption Module	Consumables	Sampler	Main Unit																										
Column Method	<input type="checkbox"/> TXA-03 for Column adsorption  You only set the activated carbon columns and the unit automatically performs the AOX adsorption and the nitrate washing. <table border="1"> <tr> <td>Operating method</td> <td>Automatic burette method</td> </tr> <tr> <td>No. of channels</td> <td>3 channels (2 x Adsorption, 1 x Washing)</td> </tr> <tr> <td>Sample size</td> <td>Burette 1,2 10 x n ml (n:1~20) Washing 2 x n ml (n: 1~10) 5 x n ml (n: 1~11)</td> </tr> <tr> <td>Power supply</td> <td>AC100/115/230/240V, 50/60Hz, 100VA</td> </tr> <tr> <td>Dimensions</td> <td>Approx.330(W)x 220(D)x 500(H)mm</td> </tr> <tr> <td>Weight</td> <td>Approx. 8kg</td> </tr> </table>	Operating method	Automatic burette method	No. of channels	3 channels (2 x Adsorption, 1 x Washing)	Sample size	Burette 1,2 10 x n ml (n:1~20) Washing 2 x n ml (n: 1~10) 5 x n ml (n: 1~11)	Power supply	AC100/115/230/240V, 50/60Hz, 100VA	Dimensions	Approx.330(W)x 220(D)x 500(H)mm	Weight	Approx. 8kg	<input type="checkbox"/> Pre-packed Activated Carbon Column DAC Column <input type="checkbox"/> Glass tube (reusable) <input type="checkbox"/> Activated Carbon Mitsubishi Carbon	<input type="checkbox"/> CI-200 Automatic Column Injector  <table border="1"> <tr> <td>Dimensions</td> <td>Approx.170(W)x 140(D)x 225(H)mm</td> </tr> <tr> <td>Weight</td> <td>Approx. 4kg</td> </tr> </table> <input type="checkbox"/> MI-200 Manual Column Injector  <table border="1"> <tr> <td>Dimensions</td> <td>Approx.237(W)x 234(D)x 308(H)mm</td> </tr> <tr> <td>Weight</td> <td>Approx. 3kg</td> </tr> </table>	Dimensions	Approx.170(W)x 140(D)x 225(H)mm	Weight	Approx. 4kg	Dimensions	Approx.237(W)x 234(D)x 308(H)mm	Weight	Approx. 3kg	<input type="checkbox"/> AOX-200 Built-in Automatic Frit Injector.  <input type="checkbox"/> AIR-200 Air Supplier  <table border="1"> <tr> <td>Power supply</td> <td>AC100/115/230/240V, 50/60Hz, 0.5VA</td> </tr> <tr> <td>Dimensions</td> <td>Approx.100(W)x 400(D)x 220(H)mm</td> </tr> <tr> <td>Weight</td> <td>Approx. 5kg</td> </tr> </table> <input type="checkbox"/> PC and Printer  (Supplied by local distributor)	Power supply	AC100/115/230/240V, 50/60Hz, 0.5VA	Dimensions	Approx.100(W)x 400(D)x 220(H)mm	Weight	Approx. 5kg
Operating method	Automatic burette method																													
No. of channels	3 channels (2 x Adsorption, 1 x Washing)																													
Sample size	Burette 1,2 10 x n ml (n:1~20) Washing 2 x n ml (n: 1~10) 5 x n ml (n: 1~11)																													
Power supply	AC100/115/230/240V, 50/60Hz, 100VA																													
Dimensions	Approx.330(W)x 220(D)x 500(H)mm																													
Weight	Approx. 8kg																													
Dimensions	Approx.170(W)x 140(D)x 225(H)mm																													
Weight	Approx. 4kg																													
Dimensions	Approx.237(W)x 234(D)x 308(H)mm																													
Weight	Approx. 3kg																													
Power supply	AC100/115/230/240V, 50/60Hz, 0.5VA																													
Dimensions	Approx.100(W)x 400(D)x 220(H)mm																													
Weight	Approx. 5kg																													
Batch Method	<input type="checkbox"/> SA-200 Batch adsorption  * Prepare a suction pump and a reservoir bottle for using SA-200 <table border="1"> <tr> <td>Dimensions</td> <td>Approx.310(W)x 200(D)x 350(H)mm</td> </tr> <tr> <td>Weight</td> <td>Approx. 2kg</td> </tr> </table>	Dimensions	Approx.310(W)x 200(D)x 350(H)mm	Weight	Approx. 2kg	<input type="checkbox"/> Ceramic Frit (reusable)	<input type="checkbox"/> FI-200 Frit Auto Sampler (Built-in to Main Unit) 																							
Dimensions	Approx.310(W)x 200(D)x 350(H)mm																													
Weight	Approx. 2kg																													

Specifications

Model	Adsorbable organic halogen analyzer AOX-200														
Analysis method	Oxidative pyrolysis /Coulometry														
Oxidative decomposition	Combustion in a quartz tube														
Sample forms	Solid (Liquid sample adsorbed to activated carbon), Liquid(QC Solution)														
Sample introduction	Drop into the open top pyrolysis tube driven by Newton's law Column: Sample adsorbed to activated carbon Frit: Frit with sample adsorbed to activated carbon														
Furnace	Vertical furnace														
Furnace temperature	Max. 1100 °C														
Detection method	Oxidation-reduction potential (Potential difference detection by electrodes)														
Detection electrodes	Silver electrode														
Titration control	Electrolytic current automatic control														
Repeatability	<table border="1"> <thead> <tr> <th>Concentration(ng/ml)</th> <th>Sample Volum(ml)</th> <th>Recovery(%)</th> <th>RSD(%)</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>20</td> <td>95 to 105</td> <td><3</td> </tr> <tr> <td>10</td> <td>100</td> <td>80 to 120</td> <td><10</td> </tr> </tbody> </table> <p>Standard Sample: 2, 4, 6-trichlorophenol solution</p>			Concentration(ng/ml)	Sample Volum(ml)	Recovery(%)	RSD(%)	100	20	95 to 105	<3	10	100	80 to 120	<10
Concentration(ng/ml)	Sample Volum(ml)	Recovery(%)	RSD(%)												
100	20	95 to 105	<3												
10	100	80 to 120	<10												
Measurement range	Total organic halogen: 0.1 to 50 µg														
Sample volume	Solid (activated carbon): 50mg or less,Liquid: 50 µl (Standard Solution for QC) or less														
Measurement time	Within 10 minutes/measurement (At 2 µg sample measurement)														
Operating Condition	15 to 35 °C, 80%RH or less (No condensation)														
Gas	When using AIR-200 unit, gas is not required. or Oxygen gas (purity 99.9% or more)*Without AIR-200 external oxygen gas is necessary to operate the AOX-200.														
Power supply	AC 100/115/230/240V, 50/60Hz, 1000VA														
Dimensions	Approx.410 (W) x 410 (D) x 550 (H)mm														
Weight	Approx. 28kg														

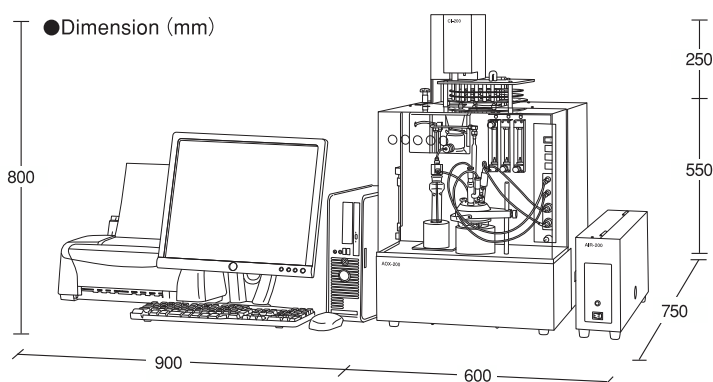
Sampler

FI-200 (built-in)	Auto Sampler for ceramic frit and column*
CI-200 (option)	Auto Sampler for activated carbon column
MI-200 (option)	Manual Column Injector

*Capable for using an adsorbed column carbon to frit.

Measurement Mode

AOX-Batch	Organic halogen(Ceramic frit 1 pc, one combustion)
AOX-1	Organic halogen(Columns 2 pcs, one combustion)
AOX-2	Organic halogen(Column 1 pc, two combustions)
AOX-SS	Organic halogen(Columns 2 pcs and Suspended solid, three combustions)



MITSUBISHI CHEMICAL ANALYTECH CO., LTD.
Instruments Division

370 Enzo, Chigasaki-shi, Kanagawa 253-0084, Japan.
Tel: +81-467-86-3864 Fax: +81-467-86-3862
URL: <http://www.mccat.co.jp/>