

Adsorbable Organic Halogen Analyzer AOX-200



DIA Instruments/Mitsubishi Chemical have developed an epoch making new Instrument for exclusive use of AOX (Adsorbable Organic Halogen). It has easy operation feature by using open top Pyrolysis Combustion. And it has a low cost run by using Air as combustion gas. AOX is the low cost analysis for Halogen measurement.

That's why world environment market is waiting for the good instrument.

DIA Instruments/Mitsubishi Chemical have a perfect line up for AOX application.



Features

Open top pyrolysis combustion provides unique features.

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

No gas are required for combustion except Air.

- ✓ Price of gases (massive saving of operation costs: 50%-75% of initial investment costs are additionally spend on gases on conventional product!!!)
- ✓ Independent operation. (No gas connection is required.)

Acetic acid destruction keep clean atmosphere.

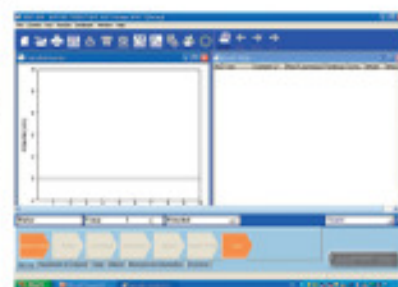
- ✓ No exposure to toxic acetic acid vapor.
- ✓ No inconvenience due to smell of acetic acid.

Small foot print (<50cm width)

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

Exclusive new software

- ✓ Very easy to operate the entire instruments — for manual operations it might be helpful to underlay the processes with a few pictures.



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 Columns and Frits / batch method.
- ✓ Capable for using an adsorbed carbon introduced to frit.

Auto sampler for column method : CI-200

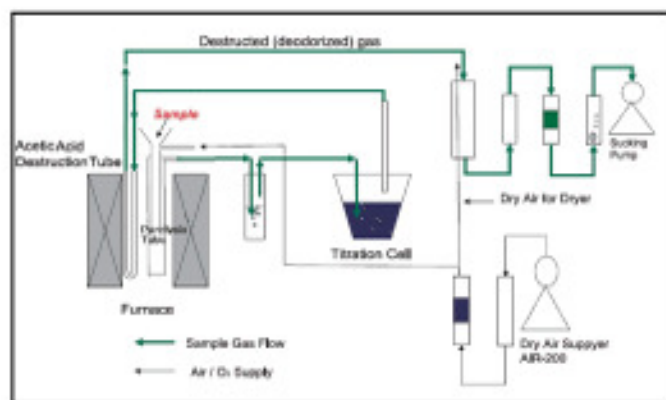
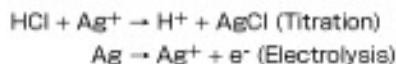
- ✓ Column Auto sampler with direct injection of activated carbon but no container. (Patent Applied)
- ✓ High capacity of the tube for samples burned on the system. (Max 300 Shots.)
- ✓ Autosamplers with rigid and robust construction.(no laser driven complicated position finding mechanisms)
- ✓ Change of auto sampler extremely easy.(Just one screw and one connector)

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

- ✓ The ceramic frit is developed for long life and strong against destruction.

Measurement Principal

The AOX burns with the activated carbon absorbed organic halogens in the oxygen (Air) flow and is converted into hydrogen halide. This produced gas is dehydrated and cleaned in the dehydrating tube with the carrier gas and are introduced into a titration cell. The resulting chloride is lead into a titration cell where it is automatically titrated by silver ions generated coulometrically. The amount of chlorine is then calculated from the quantity of electricity required for the titration.



Official Method

- ◆ISO 9562
 - Water quality-determination of adsorbable organic halogens (AOX, QC)
- ◆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  After setting the activated carbon columns, 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 ml (n=20) Washing 2 x ml (n=10) 5 x ml (n=11)</td> </tr> <tr> <td>Power Supply</td> <td>AC100/115/230/240V, 50/60Hz, 500VA</td> </tr> <tr> <td>Dimensions</td> <td>Approx.335(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 ml (n=20) Washing 2 x ml (n=10) 5 x ml (n=11)	Power Supply	AC100/115/230/240V, 50/60Hz, 500VA	Dimensions	Approx.335(W)x 220(D)x 500(H)mm	Weight	Approx. 8kg	<input type="checkbox"/> Pre-packed Activated Carbon Column <input type="checkbox"/> DAC Column <input type="checkbox"/> Glass tube (repeatable) <input type="checkbox"/> Activated Carbon <input type="checkbox"/> 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
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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 (repeatable)	<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 decomposition /Coulometry												
Oxidative decomposition	Combustion in a pyrolysis tube												
Sample forms	Solid (Liquid sample adsorbed to activated carbon), Liquid(QC Solution)												
Sample introduction	Free drop into the open top pyrolysis tube 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)*Oxygen gas is necessary to use in the AOX-200 without the AIR-200												
Power	AC 100/115/230/240V, 50/60Hz, 1000VA												
Dimension	Approx.410 (W) x 410 (D) x 550 (H)mm												
Weight	Approx. 28kg												

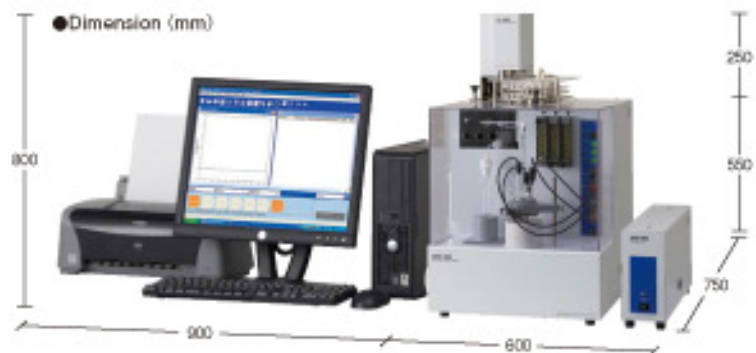
Sampler

FI-200 (built-in)	Auto sample changer for ceramic frit and column*
CI-200 (option)	Auto sample changer 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 combustion)
AOX-SS	Organic halogen(Column 1 pc and Suspended solid, three combustion)



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