NITTOSEIKO
Taking new steps forward together

Specifications

Model	Automatic Organic Halogen Analyzer Model AOX-400
Measuring Object	River sample, factory effuent, soil
Sample forms	Solid (AOX: activated carbon adsorbed liquid sample), Liquid (EOX: extraction solution)
Analysis method	Oxidative pyrolysis/Coulometry
Furnace temperature	300~1000 °C (Regular use: 950 °C)
Sample introduction	Introduction to the open top pyrolysis tube driven by Newton's law AOX: Extrusion injection of activated carbon adsorbed sample (Column method) Drop frit with activated carbon adsorbed sample (Shaking method) EOX: Direct injection by syringe
Measurement range	Total organic halogen: 0.1 to 50 µg
Sample volume	AOX sample: 50mg or less, EOX sample: 200 µL or less
Measurement time	within 10 minutes/measurement (At 2 µg sample measurement)
Number of samples	Frit : 30 samples Column : 60 samples EOX : 40 samples (Size: 2 mL vials with septum)
Gas	Using AIR-200, Air gas is not required. AOX: Air (800 mL/min) EOX: Air (100 mL/min) + Oxygen (300 mL/min)
Operation Condition	15 to 35 °C, 75 %RH or less (No condensation)
Power supply	AC 100/115/230/240 V, 50/60 Hz, 960 VA
Dimensions Weight	AOX-400 main unit : Approx. 460(W) x 420(D) x 560(H) mm, Approx. 37 kg SI-400 : Approx. 200(W) x 305(D) x 410(H) mm, Approx. 7 kg AIR-200 : Approx. 100(W) x 400(D) x 220(H) mm, Approx. 5 kg
Device control and data processing	PC, Printer: compatible with Windows®

Sampler

Shaking method	Frits set
Column method	SI-400 + Column set
EOX	SI-400 + EOX set

Nittoseiko Analytech Co.,Ltd.

International Sales and Marketing
7-10-1 Chuo-rinkan, Yamato, Kanagawa, 242-0007, Japan
TEL: +81-46-278-0056 FAX: +81-46-278-0057
URL: https://www.n-analytech.co.jp/global/

Sintech Scientific (S.E.A.) Pte Ltd
No. 194 Pandan Loop #04-11
Pantech Business Hub
Singapore 128383
Tel : 65-67790007
Fax : 63520877, 63520885
Email :sales@sintechscientific.com
Website : www.sintechscientific.com

AOX-400
Automatic Organic Halogen Analyzer

AOX-400

Water

Automatic Organic Halogen Analyzer

Fully automatic solution
for Analysis of adsorbable Organic Halogens

AOX-400
Automatic Organic
Halogen Analyzer

Accurate Objective eXtraordinary

Nittoseiko Analytech, former Mitsubishi Chemical Analytech, provides a high-end instrument of the newest generation for automated measurement of Adsorbable Organically bound Halogens: AOX-400.

The screening of AOX sum parameter is quite important to assess the quality of water, sludge or soil for contamination by organic halides (chlorine, bromine, iodine) which are adsorbed to activated carbon. Possible toxic effect from AOX on humans, animals, plants and microorganisms can be prevented by monitoring with AOX-400.

This instrument opens up an easy way to perform environmental analysis by combustion in an open top furnace which guarantees easy maintenance. The usage of air as combustion gas is an unique feature which allows low running costs.

Measurement principle

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

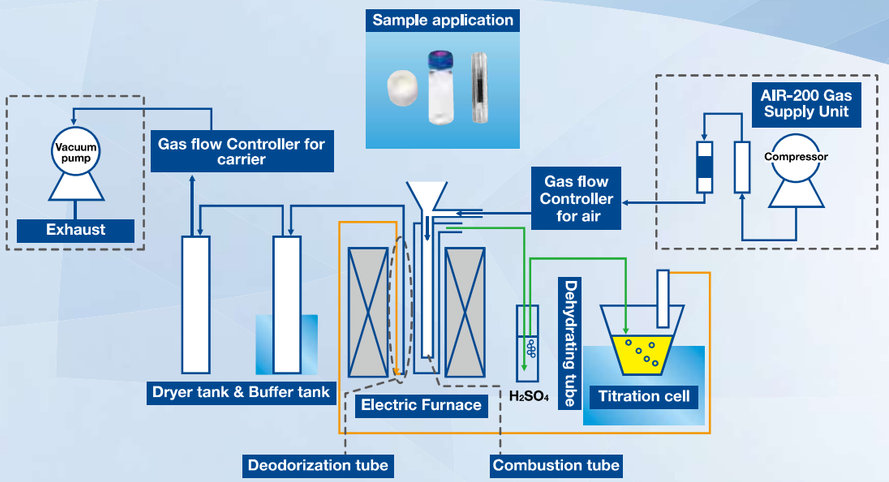
Within the titration cell the halogen ions are quantified by coulometry according to Faraday´s law. When hydrogen halide is introduced into the titration cell, the potential changes.

$HX + Ag^+ \rightarrow H^+ + AgX$ (Titration)

The amount of halogen is calculated from the quantity of electricity required for the generation of silver ions until the end potential is reached.

$Ag \rightarrow Ag^+ + e^-$

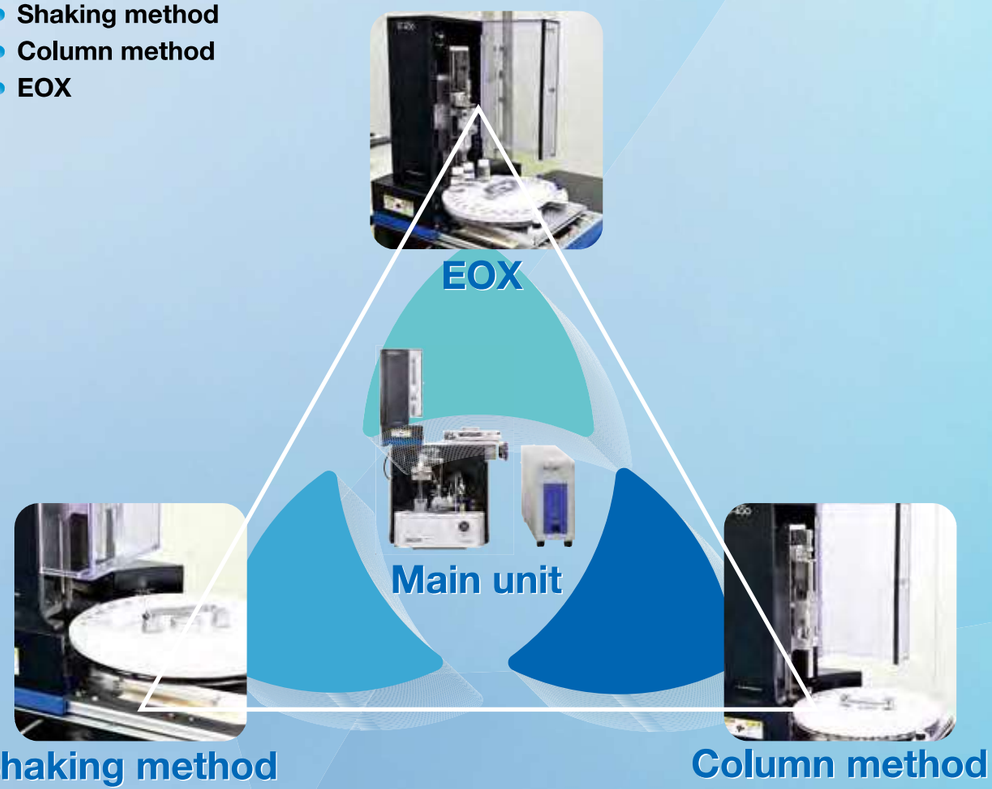
The gas is moved by application of a suction pump. This principle is used to destroy acetic acid vapor by returning the gases through a separate combustion tube within the furnace after passage of titration cell.



High flexibility

Advanced Autosamplers provide flexible combination of different measurement modes easily. AOX-400 offers convertibility between three different injection modes for:

- **Shaking method**
- **Column method**
- **EOX**



By the exchangeable head of sample introduction system SI-400 the measurement of AOX columns, AOX frits and EOX liquid organics in one unit becomes reality. Switching between column injector, frit injector or liquid injector can be performed within a few minutes. Also, the sample tray can be exchanged very quickly. Automatic and direct sample introduction by SI-400 is performed without source of contaminations which opens up low running costs and long usage times.

In addition to :

- **30 Frits**

SI-400 offers the opportunity to measure up to:

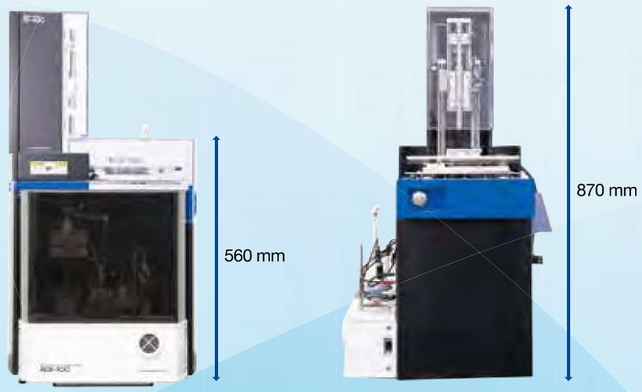
- **60 Columns**
- **40 2ml Vials**

which ensures high sample throughput.

AOX-400
Automatic Organic
Halogen Analyzer

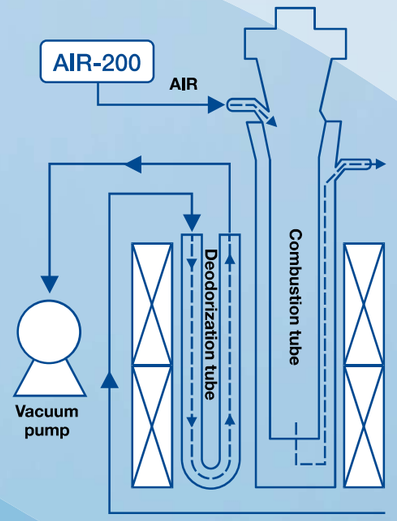
Favourable design

AOX-400 is, due to its space saving design, the ideal solution for every lab. Regardless you want to conduct AOX analysis in huge contract laboratory or in a small environmental authority. The small footprint of 46 x 42 cm makes AOX-400 to a compact and easy to handle instrument for environmental analysis.



Combustion concept

The type of construction makes AOX-400 feasible to move quickly. In addition, maintenance by checking mechanical or electrical components is quite simple. Furthermore, the open top furnace concept provides easy maintenance of the vertical arranged combustion tube to assure long lifetimes.
The combustion concept itself is associate with high safety standards: Combustion gases are pulled through the system by a vacuum pump which makes gas leakage almost impossible. Also, the appearance of acid suck-back into furnace can be excluded. Another unique feature of our combustion concept is that no gases except from air are required. Thus, independent operation under cost efficient and sustainable conditions are possible by consideration that 50-75% of initial invest costs are additionally spend on gases on conventional products. The combustion concept is the excellent result of decades of development and is tailor made for complete combustion of all kinds of samples for AOX analysis.



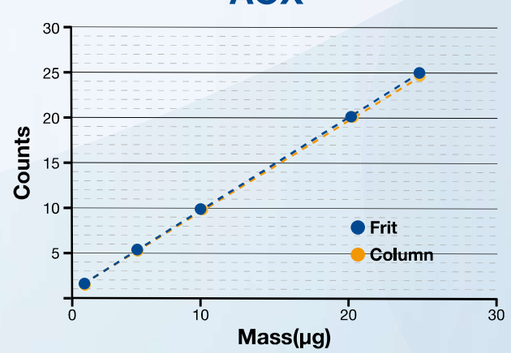
High precision and reliability

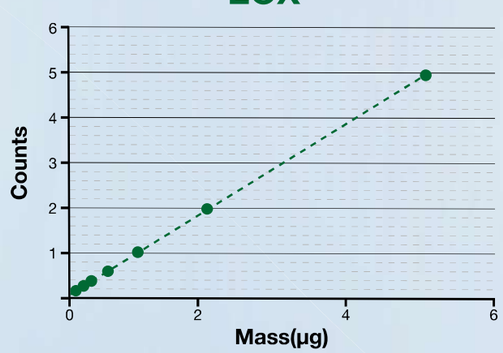
Analytical instruments from Nittoseiko Analytech convince with their precise and accurate measurement results. During instrument development we are focussing on stable and also highly reliable measurement values. One of our strength is the operation under extremely low background levels. Due to vertical combustion, sample boats are not necessary and samples are protected against ambient air by a cover. All in all, AOX-400 presents best performance within a huge measurement range from trace analysis to percent ranges.
With AOX-400 argentometric process was increased significantly by titration cell cooling which results also in longer electrolyte lifetime.

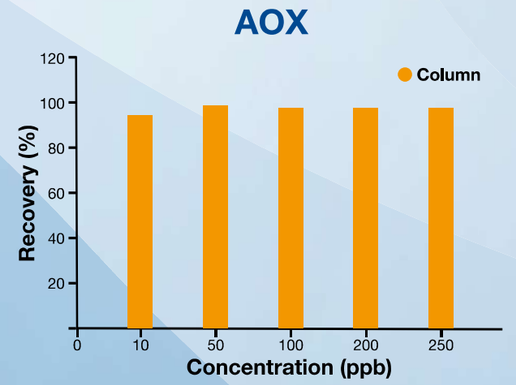
Performance

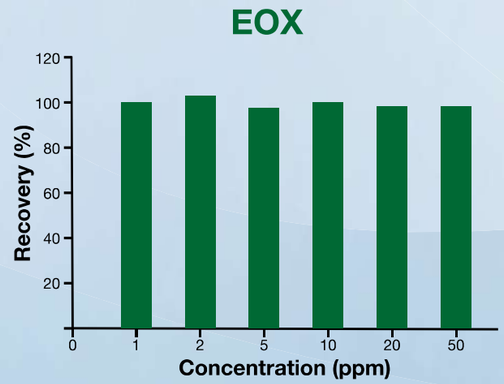
Initial validation data according to ISO official method (9562) show that AOX-400 performs with high linearity and good recovery within the specification of standard methods.

Measure-ment	Mode	Slope	Correlation coefficient
AOX	Frit	1.00	1.0000
	Column	0.98	1.0000
EOX	Liquid	0.99	0.9999









※ Reference data using standard sample

AOX-400
Automatic Organic Halogen Analyzer

Fastest Analyzer in the market

What makes AOX-400 unique in the market for environmental analysis is the combination of open top furnace concept and automatic gas control. With this particularly feature combination, AOX-400 manages the tough challenge to deal on the one hand with soluble AOX samples and on the other hand with liquid EOX samples effortlessnessly. Furthermore with AOX-400 it is possible to analyze environmental samples within a very short period of time under high system stability. Due to many optimization regarding automation and titration control AOX-400 makes it possible to measure samples up to 30% faster than our previous AOX-200. This makes our new instrument to an highly efficient analyzer for AOX and EOX.

Measurement	Mode	Detection time [min]
AOX	Frit	8
	Column	8
EOX	Liquid	7

※ Reference data using standard sample

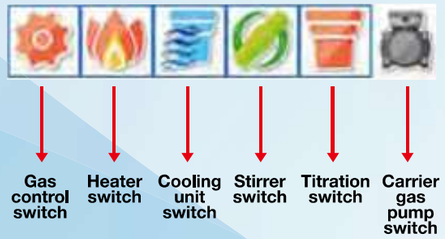
Official methods

Measurement can be conducted with the following official methods:

- **Column method:** Adsorbable organic halogens (AOX) in water can be measured by DIN EN 1485 or ISO 9562. Total organic halides (TOX) in water can be measured by EPA 9020A.
  Option: Column Adsorption Module Model TXA-04.
- **Batch method:** Adsorbable organic halogens (AOX) in sludge and sediment can be measured by DIN 38414-S18. Adsorbable organic halogens (AOX) in water can be measured by ISO 9562.
  Option: Batch Adsorption Unit Model SA-200.
- **EOX method:** Total extractable organic halides (EOX) in solids can be measured by DIN 38414-S17 and EPA 9023.

High precision and reliability

The exclusive new software of AOX-400 ensures user-friendly operation, handling and control of measurements.
For startup and shutdown an easy-to-use navigation bar is implemented which takes the user through the measurement. By intuitive shortcut buttons the operation of AOX-400 is self-explanatory so that the user can start the analysis without long training periods. For customized analysis, several different parameters can be adjusted within the software. Control of the measurement can be performed by live view.



The performance of AOX-400 instrument and the titration cell can be checked by automatic quality control functions. For integration of measurements into daily business at laboratory standby functions are available. After the measurement, the results can be reported in different settings.

AOX-400 at a Glance

- Fastest AOX analyzer in the market
- High sample throughput
- Flexible 3-injection modes are available
  Column method
  Shaking method
  EOX
- Easy maintenance by open top furnace concept
- Low running costs due to unique usage of air as combustion gas
- Uniue suction system
- Stable and highly precise measurement results
- Space-saving design
- User-friendly and intuitive software solution