Trace Elemental
Instruments

// XPREP-3

Effective Batch & Column method pre-treatment for AOX & TOX samples

TE Instruments **XPREP-3** is a filtration unit designed to prepare samples for both batch (AOX) and column (TOX) method. After the filtration stage, the samples are introduced in an automated halogen analyzer.

The filtration unit is equipped with 3 independent operating channels, which can be configured to run either batch- or column method:

• For the batch method, a quartz frit is used to separate the water from the activated carbon after the adsorption stage. Next, the reusable quartz frit is ready for introduction into the combustion zone automatically by the **NEWTON** or by manual introduction.

• For the column method, 2 pre-filled columns are connected, using luer-lock fittings for rapid column change or column holder for non luer-lock columns.

After filtration the columns are placed in the **TUSCAN**, or the halogen loaded carbon is cleared from the columns into reusable quartz sample cups, ready for introduction into the combustion zone.

XPREP-3

Easy to use

No risk of contamination
due to closed filtration system

Low cost:
re-usable and self-cleaning

No blockage columns

Per channel pressure controllable

No pressure loss
over columns or frit

How Does the Batch Method Work?

The AOX batch method is based on the adsorption of the organic halogens onto activated carbon.
A mixture of 50 mg activated carbon and 100 mL water sample is shaken for at least one hour according to the DIN, ISO and CEN regulations. During this treatment stage, the activated carbon adsorbs the organic halogens.
Gas pressure forces the water through the quartz frit, leaving only the active carbon behind. Inorganic chlorides are removed while rinsing with a nitrate wash solution.
Once the pre-treatment is completed, the quartz frit with activated carbon is transferred into the AOX analyzer.

How Does the Column - or TOX - Method Work?

Similar to the batch method, halogens are adsorbed onto activated carbon inside a pre-packed column. 2 columns are joined together and connected to the filtration unit. Next, 100 mL sample is poured into the filtration channel. Gas pressure is applied and set to reach a 3 mL/min sample flow over the joined columns.
Organic halogens will adsorb onto the first and second column. During the washing stage, inorganic chlorides are removed using a nitrate wash solution. The carbon content of each column is emptied into a reusable quartz sample cup and transferred into the analyzer.
The second column serves as a "break-through" check. If the analytical result of the second column is more than 10% of the total of both columns, the sample should be diluted and re-run. A frit may be used as particulate filter, to protect columns from "obstructing" the sample flow.

XPREP-3 Systems Specification

Dimensions (W x H x D):	50 x 52 x 29 cm (19.7 x 20.5 x 11.4 inch)
Weight:	5.0 kg (11.0 lbs)
Filtration:	Manual
Channels:	3
Filtration speed:	0 - 50 mL/min
External gas connection:	⅛" Swagelok
Gas:	Ar, N_2, (technical grade) or cleaned Air
Supply gas pressure:	3 - 8 bar
Methods/Protocol:	Batch method, Column method
Operating pressure:	0.3 - 3 bar, adjustable per channel
Sample volume:	10 - 150 mL
Wash volume:	10 - 150 mL
Waste collection:	Central waste collection with drain capability