

# Thermalox

## Features and Benefits

### Superior detector technology

The key feature of the Thermalox instruments is the improved performance of the proprietary detector technologies. NDIR and Chemiluminescent detectors used to measure, respectively, the CO<sub>2</sub> and NO<sub>x</sub> gases. This gives many advantages...

### Improved LOD's with fast analysis times of less than 2 minutes

- Coefficient of variation better than 1.5% on most ranges, generally <1.0%
- Upper Range Limit 50,000ppm
- Detection Limit better than 300PPB

### Less Sample Required

Sensitive detectors enable smaller sample aliquots. This allows for smaller sample vials to be used and allows measurements to be performed where the amount of available sample is limited.

### Smaller Lab Footprint

The ability to utilize smaller sample vials allows the vial racks to be mounted within the instrument footprint. This reduces the required footprint of the instrument and lower swept volumes within the instrument.

### Representative sub-sampling

Having the samples located close to the injection port, rather than on a remote bench mounted sampler, allows the transport of the sample without particulates "dropping out". This gives a truly representative sub-sampling of the material to be measured.

### Extended catalyst life

Lower amounts of sample and matrix in the combustion chamber lead to longer catalyst lifetime, greater instrument uptime and reduced maintenance costs.

### Low Running costs

The ability of the Thermalox to work with smaller sample amounts leads to longer catalyst life and less catalyst material consumed in total. The ability to use smaller sample vials and longer consumable lifetime reduce the running costs of the instrument.

### Easy Agitation

Small vials allow the sample to be agitated and mixed using fully automated control of the syringe pump. This eliminates the need and costs for magnetic stirrers as well as reducing the chance of sample contamination. Comparing the Thermalox to other OEM systems for the analysis of 20ppm Cellulose Micro Crystals showed superior recovery and precision against the magnetic stirrer technique.

### Complete Sample Oxidation

Smaller sample aliquots are oxidized more quickly and completely relative to larger sampling volumes. Giving accurate and reproducible results even for difficult to oxidize samples.

### Quicker, Complete sparging for NPOC

The time to perform acid sparging to remove carbonate is increased as sample amount and vial size increase. The small sample vials and sizes used in the Sercon Thermalox require no more than 90 seconds to sparge significantly reducing analysis time when compared to other manufacturers.

### Lower Swept Volumes – Faster Measurements

The unique design of the Sercon Thermalox combustion tube allows not only rapid transit of combusted materials to the detector but also efficient oxidation of samples at relevant concentration ranges. Larger combustion tubes whilst offering increased catalyst longevity, suffer from larger swept volumes which is detrimental to the sample analysis time.

### Auto-Dilution of Overage samples

Overage samples are easily diluted using a full automated in-syringe technique. The syringe drive can take a smaller aliquot of the overrange sample and dilute with ultrapure water. This simple and quick technique require no additional vial positions on the autosampler rack and gives a theoretical maximum dilution ratio of 500:1.

### TN<sub>b</sub> – Vacuum Chemiluminescence

For Nitrogen measurements we employ the vacuum chemiluminescence principle. Doing this under vacuum increases the sensitivity of the detector and gives 100% recovery on TN species.

### TN<sub>b</sub> – 100% Recovery

Traditionally recovery in TN measurements can be affected by the imperfect oxidation during the combustion stage. The unique Sercon Thermalox Nitrogen detector is sensitive enough to allow small aliquots and ensure complete combustion and 100% Recoveries.

