

Total Nitrogen Analysis Module



- Simultaneous analysis of TN_b with high temperature combustion TOC
- Chemiluminescence detection
- Fast, easy, automated
- 10 to 15 minute analysis time for triplicate analysis
- Range: 50ppb to 2000 ppm
- Precisions: $\leq 3\%$ RSD or ± 25 ppb
- TN_b represents a good approximation of TKN
- More environmentally friendly than TKN
- Less labor-intensive than TKN

FEATURES

Many applications require both TOC and TN_b analysis. Teledyne Tekmar's compact Total Nitrogen (TN) module measures TN using a chemiluminescence detector, simultaneously with TOC using our Apollo 9000/9000HS.

METHOD OF OPERATION

New advances in high temperature combustion (HTC) technology with chemiluminescence detection provide a safe, quick and easy way to monitor nitrogen loading by total bound nitrogen analysis. The analyzer uses combustion technology with a variable temperature furnace ranging from 680°C to 1000°C to handle a variety of nitrogen-containing matrices. The TN Module employs a splitter valve to allow analysis of low-level carbon, high-level nitrogen containing samples. TN and TOC analysis are performed with one standard catalyst. The software allows compliance for 21 CFR Part 11.

TN provides many advantages over TKN and is becoming a widely accepted form of analysis for wastewater, seawater, and industrial applications.

APPLICATION

- Waste Water
- Industrial Process Water
- Drinking Water
- Ground Water
- Surface Water
- Sea Water

TN_b versus TKN

Total Kjeldahl Nitrogen (TKN) is the current standard for wastewater nitrogen analysis in the US. TKN detects organic N ammonia (NH_3) on sample analysis, TKN does not detect nitrites (NO_2) and nitrates (NO_3). TN_b detects inorganic N (NH_3 , NO_2 , and NO_3) and organic bound N (excluding N_2) in sample analysis. TKN has several drawbacks as listed below:

- 2 to 3 hour analysis time.
- Extensive use of sulfuric acid during the digestion process causes environmental concerns.

- Highly labor-intensive technique.
- Certain nitrogen forms may not be fully detected.
- Interferences in the digestion process may result in loss of nitrogen.

SPECIFICATIONS

Detector: Photodiode chemiluminescence

Analysis: TN_b

Range: Limit of Detection: 50 ppbN

Maximum Measurable Concentration: 2000 ppmN

Precision: * $\leq 3\%$ RSD or ± 25 ppbN, whichever is greater over 7 replicates.

* Analytical performance is affected by laboratory water, reagent and gas purity, sample container cleanliness, sample matrix, gas regulator cleanliness and precision, and operator skill. Precision specification applicable for the following standards: Ammonium Chloride, Ammonium Nitrate, Potassium Nitrate and Urea. Other standards and sample matrices may vary.

Sample size: 500 ml

Analysis Time: 3-4 minutes, per replicate, typical.

Catalyst: One catalyst for TN and TOC analysis

Gas Supply: High Purity Oxygen, 99+%

Methods: EN-12260 and DIN-ISO 11905-2.

Note: Also see Apollo 9000™/9000HS Product Data Sheet

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