AQ400 method

EPA-151-C Rev. 0

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Total Kjeldahl Nitrogen–N in Drinking, Ground and Surface Waters, and Domestic and Industrial Wastes

1 SCOPE

This method covers the determination of Total Kjeldahl Nitrogen–N, in surface and saline waters, drinking waters and domestic and industrial waste waters. All samples require Kjeldahl digestion using a block digestion system, for example, SEAL Analytical model BD-50.

This method is equivalent to EPA Method 351.2, Rev. 2.0. This method is approved for the Clean Water Act for use in wastewater compliance monitoring, under National Pollutant Discharge Elimination System (NPDES) and is equivalent to Standard Methods 4500-N(org) D (1997 forward), ASTM Method D3590-17(B) and USGS Method I-4515-91. When semi-automated block digestion is used, subsequent distillation is not required prior to colorimetric finish.

2 RANGE OF APPLICATION

Range	0.25 – 10.0 mg N/L

3 METHOD DETECTION LIMIT

By EPA Procedure	MDL = 0.04 mg N/L

4 METHOD PRINCIPLE

Kjeldahl digestion converts nitrogen compounds of biological origin such as amino acids, proteins and peptides to ammonia, but may not convert nitrogen compounds of some industrial wastes such as nitro-compounds, hydrazones, oximes, semicarbazones and some refractory tertiary amines. Digestion details are found in Section 11 and in the references. The residue from digestion is briefly cooled, diluted and placed on the discrete analyzer for ammonia determination.

The finished digest is mixed with buffer to achieve alkaline pH without the precipitation of calcium, magnesium or heavy metal species. The released ammonia reacts with hypochlorite to form chloramine which then reacts with salicylate at a minimum pH of 12.6, which when in the presence of nitroferricyanide, intensifies the color during incubation at 40°C. A blue-green analog of indophenol blue forms and the absorbance is measured photometrically at 660 nm.

5 REFERENCES

Methods for the Determination of Inorganic Substances in Environmental Samples, EPA 600/R 93/100, 1993: Method 351.2, Rev. 2.0.

Standard Methods for the Examination of Water and Wastewater, APHA/AWWA/WEF, method 4500-N(org) D (1997 forward).