STANDARD METHOD 5310D: Wet-Oxidation Method

Method Summary

Method Source	Standard Methods
Method Number	5310 D
Revision Information	Standard Methods 18th edition (1992)
Method Name	**Descriptive Name:** TOC by Wet Oxidation **Official Name:** 5310 D. Wet-Oxidation Method
Media	WATER
Subcategory	Organic
Citation	Standard Methods Online - Standard Methods for the Examination of Water and Wastewater
Brief Method Summary	The sample is acidified, purged to remove inorganic carbon, and oxidized with persulfate in an autoclave at temperatures from 116 to 130 degrees C. The resultant carbon dioxide (CO_2) is measured by nondispersive infrared spectrometry.
Scope And Application	The wet-oxidation method is suitable for the analyses of water, water-suspended sediment mixtures, seawaters, brines, and wastewaters containing at least 0.1 mg nonpurgeable organic carbon/L. The method is not suitable for the determination of volatile organic constituents.
Interferences	Removal of carbonate and bicarbonate by acidification and purging with purified gas results in the loss of volatile organic substances. The volatiles also can be lost during sample blending, particularly if the temperature is allowed to rise. Another important loss can occur if large carbon-containing particles fail to enter the needle used for injection. Filtration, although necessary to eliminate particulate organic matter when only DOC is to be determined, can result in loss or gain of DOC, depending on the physical properties of the carbon-containing compounds and the adsorption of carbonaceous material on the filter, or its desorption from it. Check filters for their contribution to DOC by analyzing a filtered blank. Note that any contact with organic material may contaminate a sample. Avoid contaminated glassware, plastic containers, and rubber tubing. Analyze sample treatment, system, and reagent blanks.
QC Requirements	After every tenth analysis, analyze a blank and a laboratory control sample prepared from a source of material other than the calibration standards, at a level similar to the analytical samples. Preferably prepare the laboratory control sample in a matrix similar to that of the samples. Alternatively, periodically make known additions to samples to ensure recovery from unknown matrices.
Sample Handling	If possible, rinse bottles with sample before filling and carry field blanks through sampling procedure to check for any contamination that may occur. Collect and store samples in glass bottles protected from sunlight and seal with TFE-backed septa. Before use, wash bottles with acid, seal with aluminum foil, and bake at 400 degrees C for at least 1 h. Wash uncleaned TFE septa with detergent, rinse repeatedly with organic-free water, wrap in aluminum foil, and bake at 100 degrees C for 1 h. Check performance of new or cleaned septa by running appropriate blanks. Preferably use thick silicone rubber-backed TFE septa with open ring caps to produce a positive seal. Preserve samples that cannot be examined immediately by holding at 4 degrees C with minimal exposure to light and atmosphere. Acidification with phosphoric or sulfuric acid to a pH < or = 2 at the time of collection is especially desirable for unstable samples, and may be used on all samples; acid preservation, however, invalidates any inorganic carbon determination on the samples.
Max Holding Time	28 days (regulatory) and 7 days (Max Storage Recommended)
Relative Cost/Effort	Greater than $400
Source	Standard Methods