

A Year over Year General Overview of Solid Suspension

ENKELA NOÇKA

ILVA GJIKAJ

General and Inorganic Chemistry Department,
Polytechnic University of Tirana,
Tirana, Albania;

ARIOLA DEVOLLI

Department of Chemistry,
Faculty of Food and Biotechnology,
Agricultural University of Tirana, Albania

Abstract:

The purpose of our work consists in determining the content of total solid in the river Erzen.

A well-mixed sample filtered through a weighed standard glass- fiber filter had the residue retained on the filter dried to a constant weight at 103 to 105°C. The increase in weight of the filter represented the total suspended solids. The residue dried for at least 1 h at 103 to 105 °C in an oven, cooled in desiccators to balance temperature, and weighed. We repeated the cycle of drying, cooling, desiccating, and weighing until we obtained a constant weight or until the weight change was less than 4% of the previous weight or 0.5 mg, whichever was less.

We analyzed at least 10% of all samples in duplicate. The department of chemistry at FIMIF used the results from the project to determine the physic chemical parameters Erzen River.

Key words: total solid, drying, filter, river Erzen

Introduction

The residue retained after a well-mixed sample filtered through a weighed glass fiber is dried to a constant weight at 103 to 105

Celsius. The increase in the weight of the filter represents the total suspended solids. If the suspended material clogs the filter and prolongs filtration, it may be necessary to increase the diameter of the filter or decrease the sample volume so to obtain an estimate of total dissolved solids or total solids.

Exclude large floating particles or submerged agglomerates of non homogeneous materials from the sample if it is determined that their inclusion is not representative. Because excessive residue on the filter may form a water-entrapping crust, limit the sample size to that yielding no more than 200 mg residue for samples high in dissolved material. Prolonged filtration times resulting from filter clogging may produce high results owing to increased colloidal materials captured on the clogged filter.

Materials and methods

If pre-prepared glass fiber filter disks are used, eliminate this step. Insert disk with wrinkled side up in filtration apparatus. Apply vacuum and wash disk with three successive 20-ml portions of reagent-grade water. Continue suction to remove all traces of water, turn the vacuum off, and discard washings. Remove filter from filtration apparatus and transfer to in inner aluminum weighting dish. If a Gooch crucible is used, remove crucible and filter combination. Dry in oven 103 to 105 Celsius for 1 hour. If measuring volatile solids, ignite at 550 Celsius for 15 minutes in a muffle furnace. Cool in desiccators to balance temperature and weight. Repeat cycle of drying or igniting, cooling, desiccating and weighting until obtaining a constant weight or until weight change is less than 4% of the previous weighting or 0.5 mg, whichever is less, and store in desiccators until needed.

Selection of filter and sample sizes

Choose sample volume to yield between 2.5 and 200mg dried residue. If volume filtered fails to meet minimum yield, increase sample volume up to 1 L. If complete filtration takes more than 10 minutes, increase filter diameter or decrease sample volume.

Sample analysis

Assemble filtering apparatus, filter, and begin suction. Wet filter with a small volume of reagent-grade water to seat it. Stir sample with a magnetic stirrer at a speed to shear larger particles, if practical, to obtain a uniform particle size. Centrifugal force may separate particles by size and density, resulting in poor precision when point of sample withdrawal is varied. While stirring, pipette a measured volume onto the seated glass-filter. For homogeneous samples, pipette from the approximate midpoint of container but not in vortex. Choose a point both mid depth and mid midway between wall and vortex. Wash filter with three successive 10 mL volumes of reagent-grade water, allowing complete drainage between washings and continue suction for about 3 min after filtration is complete.

Samples with height-dissolved solids may require additional washings. Carefully remove filter from filtration apparatus and transfer to an aluminum weighing dish as a support. Alternatively, remove the crucible and filter combination from the crucible adapter if a Gooch crucible is used. Dry for at least 1 hour at 103 to 105 Celsius in an oven, cool in a desiccators to balance temperature, and weigh. Repeat the cycle of drying, cooling, desiccating, and weighing until a constant weight is obtain or until the weight change is less than 4% of the previous weight or 0.5 mg, whichever is less. Analyze at least 10% of all samples in duplicate. Duplicate determinations should agree within 5% of their average weight.

Calculation

$$\text{mg total suspended solid/L} = \frac{(A - B) \times 1000}{\text{sample volume, mL}}$$

Where

A=weight of filter + dried residue, mg, and

B=weight of filter, mg

Precision

The standard deviation was 5.2 mg/L at 15 mg/L, 24 mg/L at 242 mg/L, and 13 mg/L at 1707 mg/L in studies by analysis of two four sets of 10 determinations each.

The method used was standard deviation of differences of 2.8mg/L for single laboratory duplicate analyses of 50 samples of water and wastewater.

Results

Parallel samples	The weight of the filter	Filter weight after drying the solid composition	Δ (mg)	mg/L
I-I	0.0648	0.0692	4.4	17.6
I-II	0.0644	0.0695	5.1	20.4
II-I	0.0642	0.0723	8.1	32.4
II-II	0.0641	0.0730	8.9	35.6
III-I	0.0641	0.0738	9.7	38.8
III-II	0.0644	0.0759	11.5	46
IV-I	0.0687	0.0866	17.9	71.6
IV-II	0.0643	0.0833	19	76

Samples taken at morning reduce the spills compared to the ones taken at noon. The amount taken is 250 ml. Note that the third sample changed with its parallel. Taken into account the average values, it became a filtering of other measurements

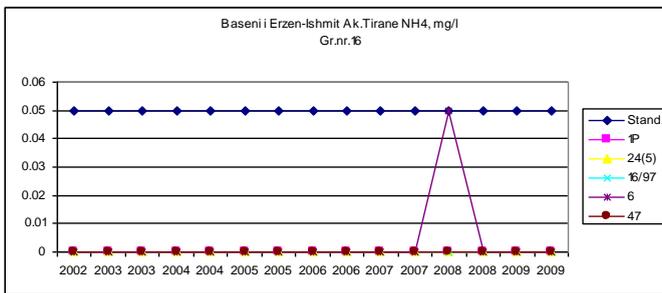
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Parallel samples	The weight of the filter	Filter weight after drying the solid composition	Δ (mg)	mg/L
III	0.0695	0.0805	11	44

The chart below illustrates the annual stretch of dry residue of river Erzen.

The risk of contamination is due to the small surface of the thick protective cover layer aquifer

Fig.1 The results monitoring (Mp)



Here are our conclusions and recommendations:

Conclusions

- Reducing wastewater discharges rich in nutritional substances and limiting the use of organic fertilizers or chemicals in areas near the lagoons
- Strengthening the legal framework for the conservation and protection of surface waters (rivers, lakes, seas) by discharges of untreated wastewater.
- It is recommended to cooperate with local authorities to establish bathing prohibited areas, in those cases where the microbiological contamination of bathing waters is above the recommended for protection of the population.

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