



Total Dissolved Solids in Water

A. OBJECTIVE

To determine the amount of filterable residue (Total Dissolved Solids -TDS) of water samples. Filterable residue is defined as those solids capable of passing through a glass filter and dried to constant weight at $180^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

B. MATERIALS

1. Glass microfiber GF/A Filters (47 mm diameter)
2. Filter holder
3. Membrane filter funnel
4. Gooch crucibles, 250 ml
5. 1L suction flask
6. Evaporating dishes, porcelain, 150 ml
7. Steam bath
8. Desiccator
9. Drying oven, $180^{\circ}\text{C} \pm 2^{\circ}\text{C}$
10. Analytical balance, capable of weighing to 0.1 mg

C. PROCEDURE

1. Prepare glass microfiber filter discs

- a. Using forceps, place the disc on the membrane filter apparatus.
- b. While vacuum is applied, wash the disc with three successive 20 mL volumes of distilled water.
- c. Remove all traces of water by continuing to apply vacuum after water has passed through.
- d. Discard washings.

2. Prepare evaporating dishes

- a. Heat the clean dish to $180 \pm 2^{\circ}\text{C}$ for 1 hour.
- b. Cool in desiccator. Weigh immediately before use.

3. Filter sample and dry

- a. Assemble the filtering apparatus and begin suction. The filtering apparatus must be rinsed with deionized water to remove any foreigner particulars
- b. Shake the sample vigorously and rapidly transfer 100 mL to the funnel by means of a 100 mL graduated cylinder. The graduated cylinder must be rinsed to ensure quantitative transfer.
- c. If total filterable residue is less than <200 mg, a larger volume may be filtered and the volume recorded.
- d. Filter the sample through the glass fiber filter, rinse with three 10 mL portions of deionized water and continue to apply vacuum for about 3 minutes after filtration is complete to remove as much water as possible.
- e. Transfer 100 mL (or a larger volume) of the filtrate to a weighed evaporating dish and evaporate to dryness on a steam bath. Dry the evaporated sample for a least one hour at $180 \pm 2^\circ\text{C}$.
- f. Cool in a desiccator and weigh. Repeat the drying cycle until a constant weight is obtained or until weight loss is less than 0.5 mg,

D. CALCULATIONS

$$TDS, mg/L = (A - B) * \frac{1,000}{C}$$

where:

TDS = total dissolved solids

A = weight of dried residue + evaporating dish in mg

B = weight of evaporating dish in mg

C = volume of sample used in mL

E. REFERENCES

1. EPA. 1971. Method 160.1: Residue, Filterable (Gravimetric, Dried at 180°C). Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020).

F. VERSION CONTROL

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Original	1.0	8/22/2022	EPA method 160.1.

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