Experiment Details

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| Department Name | Cvil Engineering |
| Class | T.Y. B. Tech |
| Semester | I |
| Subject Name | Environmental Engineering 2 |
| Experiment No. | 2 |
| Experiment Name | Determination of TS, TDS, TSS |

Version History

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| Sr. No. | Version Number | Created By | Approved By | Date |
| 1 | v1.0 | Akshay Devalapurkar | Prof. Sunil Mane | 17/11/2020 |
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AIM: To Determine the TS,TDS and TSS of a given water sample.

THEORY: Total solids are dissolved solids plus suspended and settleable solids in water. In stream water, dissolved solids consist of calcium, chlorides, nitrate, phosphorus, iron, sulfur, and other ions particles that will pass through a filter with pores of around 2 microns (0.002 cm) in size.

 **Total Dissolved Solid (TDS)** is the amount of combined contents of all inorganic and organic substances contained in a liquid in molecular, ionized or micro-granular (colloidal sol) suspended form. Total dissolved solids are usually discussed only for freshwater systems, as salinity includes some of the ions constituting the definition of TDS.

 **Total Suspended Solids (TSS)** are solids that can be trapped using a filter in water. TSS can include a wide variation in material, such as silt, decaying plant and animal matter, industrial wastes, and sewage. High concentrations of suspended solids can cause several problems to stream health and aquatic life.

 **Total Solids (TS)** can be found by summation of TSS and TDS.

PRE TEST:

1. Fine suspended solid in water is removed by

a : Screening

b : Skimming

**c : Sedimentation**

d : Filtration

1. Total Suspended Solids are mostly responsible for

a : Colour

**b : Turbidity**

c : Odour

d : Taste

1. The chemical substance used in the desiccators is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a : Calcium Carbonate

b : Sodium Chloride

c : Sodium Hydroxide

**d : Calcium Chloride**

1. Always the Total Suspended Solids value will be

a : Less than Total Dissolved Solids

b : Greater than Total Dissolved Solids

**c : Less than Total Solids**

d : Greater than Total Solids

1. High total dissolved solids indicates lower level of hardness.

a : True

**b : False**

PROCEDURE:

PROCEDURE –TS

1. Take an evaporating dish at least 100 ml capacity. Ignite at 550˚C in a muffle furnace for

about an hour, cool in desiccators and weigh.

2. Evaporate 100ml unfiltered sample in the evaporating dish and keep in ovenat 100˚C for24 hours.

3. After cooling take final weight of dish.

PROCEDURE –TDS

1. Take an evaporating dish at least 100 ml capacity. Ignite at 550˚C in a muffle furnace for

about an hour, cool in desiccators and weigh.

2. Evaporate 100ml filtered sample (filtered through Whatman’s No.1 Filter Paper) in the

evaporating dish and keep in oven at 100˚C for 24 hours.

3. After cooling take final weight of dish.

PROCEDURE –TSS

TSS ,mg/l = TS - TD

POST TEST:

1. The concentration of dissolved solids in water can be determined by Specific conductance.

a : False

**b : True**

2. The settleable suspended solids with diameter 0.15 to 0.2mm are generally

**a : Inorganic**

b : Organic

c : Algae

d : Fungi

3. The dissolved solids that impose BOD are \_\_\_\_\_\_\_\_\_\_\_\_\_

a : Non-volatile solids

b : Total solids

c : Inorganic solids

**d : Volatile solids**

4. As per IS Code the acceptable TDS value is

a : 250ppm

b : 750ppm

**c : 500ppm**

d : 900ppm

1. The presence of high total solids in water changes the colour and taste of water.

**a : False**

b : True

REFERANCES:

1. IS 3025 (Part 15)- 1984: Method of Sampling and Test (Physical and Chemical) for Water and Wastewater : Total Residue (total Solids, Dissolved and Suspended, First Revision.
2. American Public Health Association et al, Standard Methods for the Examinations of Water and Wastewater, APHA. 1998.
3. Sawyer, C. N., McCarty, P. L., and Parkin, G. F. 2000. Chemistry for Environmental Engineering. Fourth Edition, McGraw-Hill, Inc., New York.