

Equations

Dried dish solids test

$$\text{(Total solids) TS} = W_s / V$$

$$\text{(Total Volatile Solids) TVS} = W_v / V$$

$$\text{(Total Fixed Solids) TFS} = \text{TS} - \text{VS} \quad \text{if there are no suspended solids TFS} = \text{TDS}$$

$$W_v = W_s - W_f$$

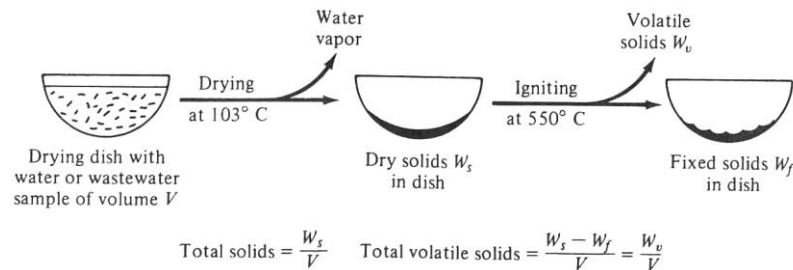


FIGURE 8.1 Diagram of laboratory procedure to determine total solids and total volatile solids concentrations of a water or wastewater sample.

Suspended solids (filter paper tests)

Same distribution holds for solids retained of filter paper, i.e. $VSS = TSS - FSS$ where FSS is fixed suspended solids

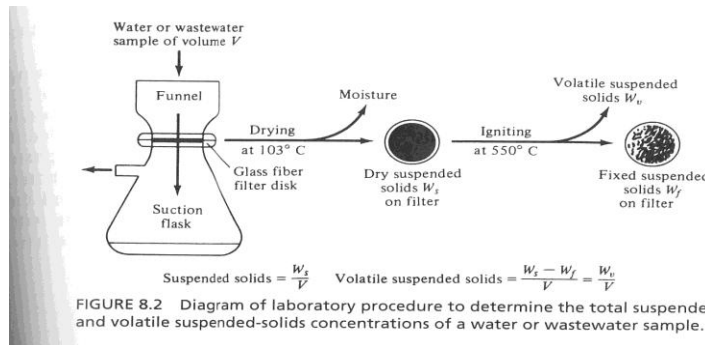


FIGURE 8.2 Diagram of laboratory procedure to determine the total suspended-solids and volatile suspended-solids concentrations of a water or wastewater sample.

$$\text{BOD test: } \text{BOD} = \frac{(D_1 - D_2) - (B_1 - B_2) f}{P}$$

$$P = (\text{vol. raw WW}) / (\text{vol. diluted sample tot.})$$

f = ratio of seed vol. in seeded wastewater to seed vol. in blank tests

$D_1 - D_2$ = DO depletion in BOD test

$B_1 - B_2$ = DO depletion in “blank” seed test

$$\text{BOD time variation: } \text{BOD}_t = L(1 - 10^{-k't}) = L(1 - e^{-k't})$$

$$\text{Base e BOD constant } k' = 2.3026 k \quad (k \text{ is base 10 BOD constant})$$