

Total Dissolved Solids (TDS)



- Amount of dissolved Ions and molecules remains in water after passing through the filter with the pores $\sim 2 \mu\text{m}$
- Inorganic salts and some organic compounds
- Normal drinking water $\sim 25\text{-}250 \text{ mg/L}$, permissible limit $< 500 \text{ mg/L}$, rain water $\sim 10 \text{ mg/L}$

Total Dissolved Solids						
500ppm	400	300	200	100	40ppm	0
Potentially Hazardous	Possibly Hazardous	Borderline Average tap Water		Acceptable water	Ideal drinking water from Natural Springs	

Changes in TDS \rightarrow affects the flow of water in and out of the cell

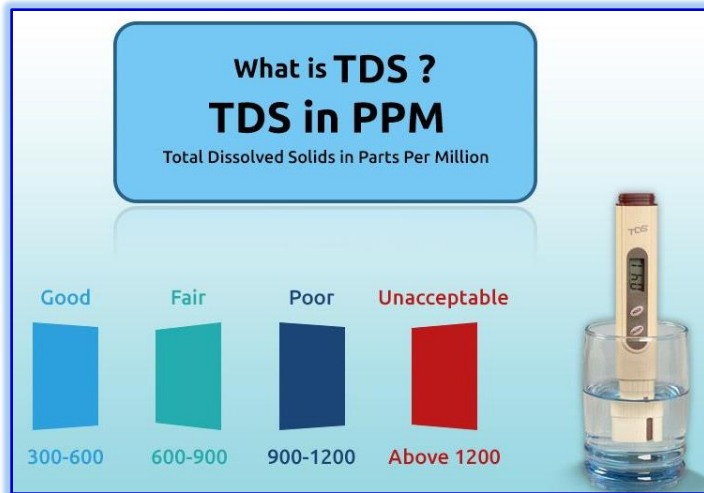
High TDS \rightarrow Hinders the photosynthesis

Total Dissolved Solids (TDS)



Total dissolved solids (TDS) is the amount of particles dissolved in water

- They come from
 - a) Organic sources (leaves)
 - b) Silt (fine sand, clay, or other material carried by running water and deposited as a sediment)
 - c) Industrial wastage and sewage as well as runoff from urban sources, fertilizers and pesticides
 - d) Inorganic materials such as rocks and air that may contain calcium bicarbonate, nitrogen, iron, sulphur and other minerals

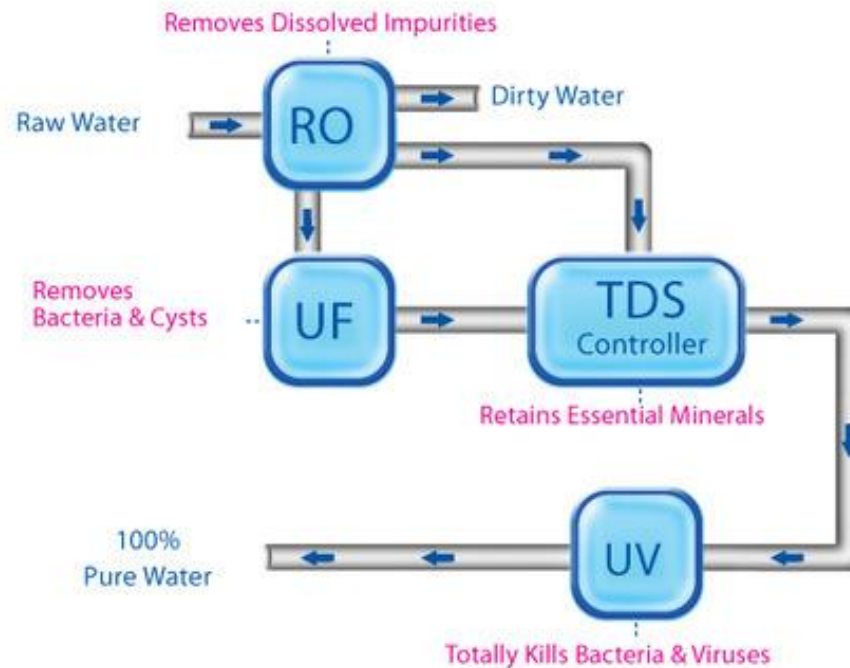


Levels of TDS (milligrams per litre)	Rating
Less than 300	Excellent
300 - 600	Good
600 - 900	Fair
900 - 1,200	Poor
Above 1,200	Unacceptable

Total Dissolved Solids (TDS)



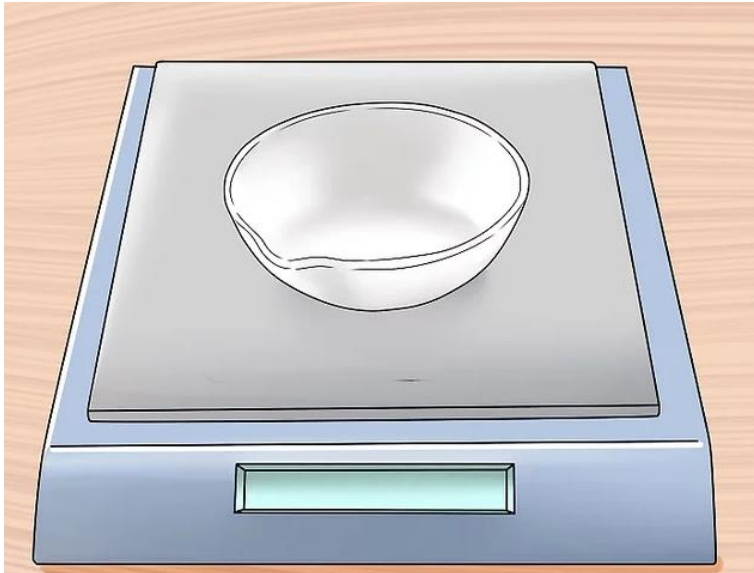
- A constant level of minerals, *e.g.* Phosphorous, nitrogen and sulphur, is necessary for aquatic life.
- Concentration of dissolved solids should not be too high or too low which can affect the growth and leads to death of many aquatic organisms.
- High concentration of dissolved solids reduces the clarity of water and can decrease the photosynthesis and raises the water temperature.




Total Dissolved Solids (TDS) - Measurement



- It can be determined taking a known amount (say 100 mL) of water and by evaporating the contents carefully to dryness.
- The residue (W/g) left after evaporation of the filtered sample shows the total dissolved solids present in that particular water sample.




$$\text{TDS} = [(A - B) \times 1000] / \text{mL sample}$$

A = weight of the evaporating dish + filtrate
B = weight of the evaporating dish on its own

Total Dissolved Solids (TDS) - Measurement



$$\text{TDS} = (W/100) \times 10^6 \text{ mg/L or ppm}$$

Measurement Methods

- Conductivity
- Gravimetric
- TDS for distilled water will be 0.5-1.5 mg/L
- TDS ranges from 100-20,000 mg/L in river water and will be generally higher in ground water
- Sea water have ~3500 mg/L of TDS
- Lakes and streams will have a TDS of 20-250 mg/L

