

Salinity

@wikipedia

Weight share of solid particles (usually salt) in fluid or soil.

It is normally measured as the ratio of salt weight to pure fluid/soil weight:

(1)
$$\text{Sal} = \frac{\text{mass}_{\text{salt}}}{\text{mass}_{\text{pure fluid/soil}}}$$

Symbol	Dimension	SI units	Oil metric units	Oil field units	Additional
Sal	—	‰	‰	‰	$\text{frac} = 10^{-3} \text{‰} = 10^{-6} \text{ ppm}$ $\text{‰} = \text{ppk} = \text{ppt} = 1,000 \text{ ppm}$ $\text{wt\%} = 0.01 \text{ frac} = 0.1 \text{‰} = 100 \text{ ppm}$ ^[1] $\text{g/L} = 10^{-3} \text{ frac} = 10^{-5} \text{ wt\%} = 1 \text{ g/kg} = 1 \text{‰} = 10^3 \text{ mg/L} = 10^3 \text{ ppm}$ ^[2] $\text{mg/L} = 1 \text{ ppm} = 0.01 \text{ wt\%} = 0.001 \text{‰}$

^{[1],[2]}: In engineering practice, the Salinity is often measured in [g/L] and [mg/L] as equivalent of ppk and ppm correspondingly.

But this is a misnomer as these units have a physical meaning of density while the standard Salinity measure is a dimensionless quantity and frac, wt%, ppk and ppm should be used instead.

The equalities ^[1] and ^[2] take the true meaning only when non-saline fluid has a density of 1 kg/L which is close to the distilled water density at Standard Conditions (0.9991 kg/L).

See Also