

of Siemens per meter (S/m) or in the older units of mhos per centimeter (mhos/cm). Generally, electrical conductivity is reported in tenths of Siemens or deciSiemens per meter (dS/m) which are equal to the old reporting unit of millimhos per centimeter (mmhos/cm). Electrical conductivity expressed in dS/m is the preferred salinity measurement because it represents the total salinity that may be associated with possible salt stress on plants from saline irrigation.

Electrical conductivity and concentration of dissolved salts (in parts per million, ppm) are directly related units depending on the salts present. A sodium chloride solution of 1 dS/m is equal to 640 ppm soluble salts. Other salt solutions vary from 550 to 700 ppm for every 1 dS/m. Water sample salinities are often compared to those of seawater which has an average EC of 43.0 dS/m and about 32,000 ppm dissolved salts.

Irrigation water has been classified into four categories based on the salinity hazard (Table 1). These limits were determined by the U. S. Salinity Laboratory based on the relationship between electrical conductivity of water and electrical conductivity of soils to which the water has been applied. Water with EC readings of less than 0.75 dS/m is suitable for irrigation without any problems. Successful use of water with EC values above this level depends upon soil conditions and plant tolerance to salinity.

Quality of irrigation water is also influenced by other specific ions. The amount of sodium is of prime concern because it is often found in the largest amount. Excessive sodium destroys soil structure. Sodium is also an antagonistic ion which displaces potassium and can limit availability of iron, manganese, and phosphorus in soils. Boron in irrigation water is rarely a problem with turfgrasses because boron accumulates in leaf tips which are removed by regular mowing. Other landscape plants may be more sensitive to boron levels. High

Table 1. Classification of Saline Irrigation Water.

Salinity class	Electrical conductivity (dS/m)	Concentration of dissolved salts (ppm)	Comments
Low	<0.25	<160	Low salinity hazard
Medium	0.25 – 0.75	160 – 480	Some leaching required
High	0.75 – 2.25	480 – 1440	Good drainage required and salt-tolerant plants
Very high	>2.25	>1440	Excellent drainage required and very salt-tolerant plants