

## Typical Values of Electrical Conductivity and Resistivity of Soils and Waters measured with LandMapper

LandMapper is the only device you will need to reliably measure electrical properties in wide range of conductivities: from ultra-pure water and rocks to salty brines and ocean waters!

Hand-held and portable, LandMapper utilizes the most accurate 4-electrode contact method, uses one 9-volt battery and can measure down to 10 m (30 ft).

Typical Water or Soil* Salinity	Electrical Conductivity, ECw (dS/m)	Electrical Resistivity, ER (Ohm m)	Total dissolved solids, TDS (ppm)	Measuring Mode: Display reads: <b>Base unit</b> Measuring limits: Unit modifiers displayed	EC (conductivity) 000 K1*C= <b>S/m</b> <b>10<sup>-6</sup> – 10 S/m</b> <b>n, mk, m</b>	ER (resistivity) 000 K1*R= <b>Ohm m</b> <b>0.1-10<sup>6</sup> Ohm m</b> <b>K</b>	
Air	- reading of non-connected Landmapper =>			<b>K</b> - kilo Ohm m = 10 <sup>3</sup> Ohm m	~390n	~2560K	range of reliable measurements with LandMapper ERM-02
Dry Granite/Gabbro	10 <sup>-5</sup>	10 <sup>6</sup>	N/A	<b>n</b> - nano S/m = 10 <sup>-9</sup> S/m	1000n	1000K	
Ultra-pure Water	5.6 * 10 <sup>-6</sup>	178,571	3.6 * 10 <sup>-2</sup>	<b>mk</b> - micro S/m = 10 <sup>-6</sup> S/m	5.6mk	178.5K	
Distilled Water	0.02	500	12.8	<b>m</b> - milli S/m = 10 <sup>-3</sup> S/m	2m	500	
Non-saline Sandy Soil	0.01 - 1*10 <sup>-5</sup>	100-10,000	N/A		1m-1mk	100 - 10K	
Non-saline Silt Soil	0.05-0.5	20-200	N/A		5m-50m	20-200	
Non-saline Clay Soil	0.1 - 2	5-100	N/A		10m - 200m	5-100	
<b>Nonsaline water</b>	<0.7	>143	<500		< 70m	143	
<b>Saline water</b>	0.7-47	0.24-143	500-30,000		300m	3.33	
Slightly saline	0.7-3	3.33	500-2,000		600m	1.67	
Medium saline	3-6	1.67	2,000-4,000		1.4	0.71	
Highly saline	6-14	0.71	4,000-9,000		4.2	0.21	
Very highly saline	14-47	0.21	9,000-30,000		>4.7	<0.24	
<b>Brine</b>	>47	<0.24	>30,000		4.3	0.23	
Atlantic Ocean	43	0.23	27,520		15.8	0.06	
Great Salt Lake	158	0.06	101,120		51.6	2 * 10 <sup>-4</sup>	
Dead Sea	~516	2 * 10 <sup>-2</sup>	330,000				
					$EC = \frac{1}{ER}$	$ER = \frac{1}{EC}$	



Salinity of Lakes is taken from [http://www.duluthstreams.org/understanding/param\\_ec.htm](http://www.duluthstreams.org/understanding/param_ec.htm)



EC <=> ER conversions only valid for base units S/m <=> Ohm m!

Soil salinity is routinely evaluated in the labs from electrical conductivity of liquid soil saturation extract (ECe). The resulted total salinity is reported either directly in conductivity units (dS/m) or converted to TDS (total dissolved solids) concentration in ppm (parts per million) using formula:

$$1 \text{ dS/m} = 640 \text{ ppm} = 640 \text{ mg/L} = 0.64 \text{ g/L} = 0.064\% = 45.7 \text{ grains per gallon}$$

# LANDMAPPER<sup>®</sup>



FIELD EC METER WITH LAB ACCURACY

- Fast
- Portable
- Versatile
- Affordable
- in-depth  
 $\Omega \cdot \text{m/S} \cdot \text{m}^{-1}/\text{mV}$

