CONDUCTIVITY METER

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TDS

The conductivity is very sensitive term it is directly proportional to TDS and also Temperature.

PORTABLE CONDUCTIVITY METER ARE AVAILABLE IN MARKET

Single combination electrode
• Select °C or °F, Beta (ATC for conductivity) adjustable from 1.8 to 2.4%, ppm conversion factor from 0.45 to 0.74
• Simple two-button function control
• Illuminated % battery power display when unit is turned ON
• Complete with meter, probe, and rugged case.

TDS METER

A TDS Meter indicates the Total Dissolved Solids (TDS) of a solution, i.e. the concentration of dissolved solids in it. Since dissolved ionized solids such as salts and minerals increase the conductivity of a solution, a TDS meter measures the conductivity of the solution and estimates the TDS from that.

TDS Meters, Conductivity and Conversion Factors

Though there is a close relationship between TDS and Electrical Conductivity, they are not the same thing. Total Dissolved Solids (TDS) and Electrical Conductivity (EC) are two separate parameters. The only true method of measuring TDS is to weigh residue found in water after the water has evaporated. You know those spots you see on a glass after you wash it and let it air dry? That's TDS! That residue has mass, and it's possible to weigh it, but if you're not in a lab, it can be tricky thing to do. Therefore, we can estimate TDS levels based on the conductivity of the water since the hydrogen and oxygen molecules of the H_2O carry almost no electrical charge. The EC of most other metals, minerals and salts will carry a charge. A TDS meter measures that EC level and then converts it to a TDS measurement. Since different metals, minerals and salts will be more or less conductive than others, there are different conversion factors that can be used.

MAINTENANCE OF CONDUCTIVITY METER

The regular following maintenance is required for conductivity meter

1. **Cleaning of the cooler**
2. **Cleaning of the electrode**
3. **Adjustment of flow rate .etc.**

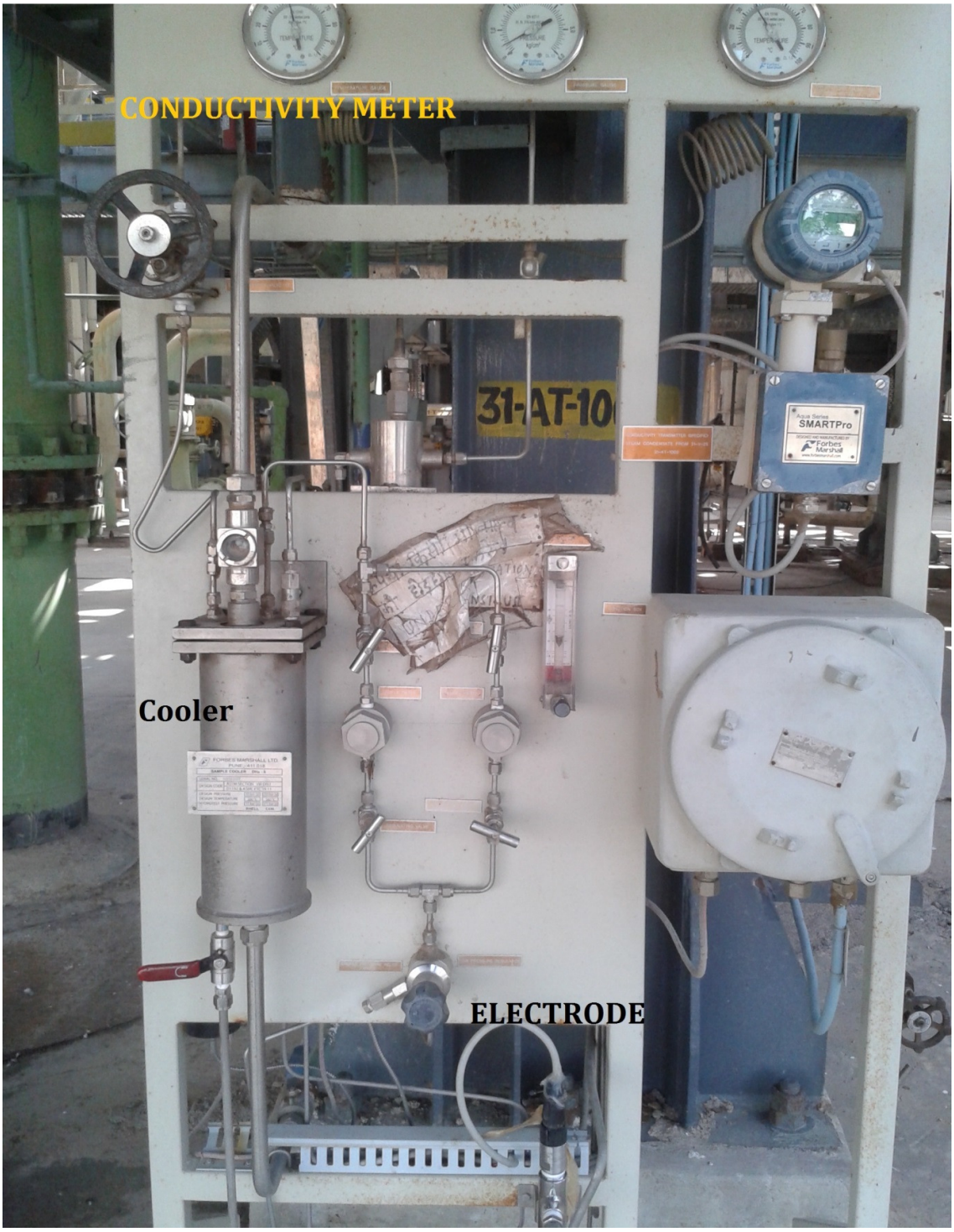

Fig-1(Conductivity meter with all accessories)

ppm (parts per million) is the most commonly used scale to measure TDS (Total Dissolved Solids).

***μS* (micro-Siemens) is the most commonly used scale to measure EC (Electrical Conductivity).**

ABOUT TDS and EC

TDS and Conversion Factors

EC: There is no conversion for electrical conductivity. (NOTE: The three EC modes in the COM-100 differ only in their ATC programs. The standard EC mode is KCl.)

TDS - NaCl: 0.47 to 0.50
TDS - 442: 0.65 to 0.85
TDS - KCl: 0.50 to 0.57

(NOTE: Most HM Digital meters use the NaCl factor. The COM-100 has the above three modes, which are user-selected. When converting EC to TDS, the COM-100 uses the non-linear scales, as they would occur in nature, thereby giving you more accurate readings than meters that use linear scales.)

Converting between different scales

PPM → μS:

The conversion factor of the TDS meter must be known. Once known, the conversion factor should be multiplied by the TDS level. (NOTE: For the COM-100, simply change the mode on the meter. There is no math required.)

PPM → PPT:

Divide by 1000 (1000 ppm = 1 ppt)
μS à mS: Divide by 1000 (1000 μS = 1 mS)

Reasons for varied readings include:

Ions:

The nature of charged positive ions (which is what the TDS meters are measuring) is that they are always moving. Therefore, there may always be variances in the conductivity, and thus a different reading.

Temperature:

Even with ATC, temperature changes by a tenth of a degree may increase or decrease the conductivity. Additionally, the temperature coefficient (what the reading is multiplied by to adjust for temperature differences) changes slightly depending upon the range of ppm. Our meters and virtually every meter under $500 has a single temperature coefficient, regardless of the range. (The new COM-100 offers three temperature coefficient options, but each is linear once selected.)

Air bubbles:

Even a tiny air bubble that has adhered to one of the probes could potentially affect the conductivity, and thus the reading.

Lingering electrical charges:

Electrical charges off fingers, static electricity off clothes, etc. on the meter and lingering electrical charges in the water will affect the conductivity of the water.

Beaker/cup material:

Plastic cups retain lingering electrical charges more than glass. If the meter touches the side of the glass or plastic, it could pick up a slight charge. If the plastic is retaining a charge, it could also affect the water.

Volume changes:

The amount of water in the sample may affect the conductivity. Different volumes of the same water may have different levels of conductivity. Displacement may affect the conductivity as well.

Probe positioning:

The depth and position of the probe in the water sample may also affect the conductivity. For example, if a meter is dipped into the water, removed and then dipped into the water again, but in a different spot, the reading may change.

SOME BASIC FUNDAMAENTALS

Shake:

Always make sure to shake excess water off the meter before dipping it into a water sample, even if it's the same water.

Stir/tap:

After dipping the meter in the water, always lightly tap it against the side and stir the meter to remove any lingering air bubbles or electrical charges.

Positioning:

When taking the reading, always make sure to hold the meter straight up without it touching the sides or bottom of the glass/beaker/cup. The probes should be suspended as close to the centre of the water sample as possible.

Time:

The longer the meter is in the water, the more accurate the reading will be The longer the meter is in the water, the more accurate the reading.

Temperature:

25 degrees Celsius is the ideal temperature for conductivity readings, even if the meter has ATC.

Rinse:

If switching between very low and very high ppm water, always rinse the probes with distilled water to avoid any build-up.

CALIBRATIONS

KCl:

Potassium Chloride is the international standard to calibrate instruments that measure conductivity. The KCl conversion factor is 0.5-0.57.

NaCl:

Sodium Chloride is used in water where the predominate ions are NaCl, or whose properties are similar to NaCl, such as seawater and brackish water. The NaCl conversion factor is 0.47 to 0.5.

Measurements in EC (µS) do not have a conversion factor, but do require the correct setting for the proper temperature coefficient.

Pinpoint accuracy always necessary when testing for TDS or conductivity

Usually not. TDS is primarily about range. For the majority of industries that require TDS testing, such as drinking water, aquaculture, hydroponics, etc. it is more important for your TDS levels to be within a certain range. There are a few industries that do require a precise ppm level, but that level is almost always zero. With the exception of colloidal silver, there is never a time in which someone needs an absolute precise level of TDS in their water.

Difference between a parameter and a scale

A parameter is the characteristic being measured. A scale is a particular range applied to the measurement of that parameter. For example, temperature is a parameter. Fahrenheit or Celsius is a scale.

"EC a parameter "

"EC" is a parameter. It stands for Electrical Conductivity. There are a number of scales used in EC, most commonly micro-Siemens (μS) or milli-Siemens (mS). For example, if a particular application calls for water with "2.0 EC," this is an incorrect determination. Most likely, the application is calling for an EC level of 2.0 mS. 2.0 mS = 2000 μS.

The symbol 'μ' is not a lowercase U, but the Greek letter Mu. It is the abbreviation for micro, and when used with an S (μS) it stands for mirco-Siemens, which is a scale used for measuring EC.

Conversion of from EC (μS) to TDS (ppm)

The best thing to do is use a TDS meter, which will automatically do the conversion. EC meters do not use conversion factors because there is no conversion. To convert to TDS, if you do not wish to use a TDS meter, you will need to determine which conversion factor you want to use (NaCl, 442 or KCl) and do the math.

Use a TDS meter to test for salt in salt generator pools

Any of HM Digital's TDS meters can be used to test for salt (up to the maximum range of the meter). Salt is a part of Total Dissolved Solids and therefore will be part or all of the reading. If you are first filtering the water, and then adding salt, simply use the meter as you would under any circumstances. If there is only salt in the water, and the reading is 2500 ppm, then the it is 2500 ppm (mg/L) of salt. If you are starting with tap water and filling a pool, for example, prior to adding salt, then first test the level of your tap water. Therefore, if your tap water is 200 ppm, and your pool needs to be 3500 ppm of salt, then add 3300 ppm of salt. (A small portion of the tap water TDS may be salt.)

TDS meter be used for testing water softeners

No. Water softeners do not remove TDS. Instead, water softeners work through a process of ion exchange. As water flow through the water softener, it will pass through a resin, bed of small plastic beads or chemical matrix (called Zeolite) that will exchange the calcium and magnesium ions with sodium ions (salt). Therefore, the TDS level will remain virtually constant (there may be minor differences).

Conversion of from TDS (ppm) to EC (µS)

The best thing to do is use an EC meter. If you know which conversion factor your meter uses, you can do the math. Most HM Digital meters use the NaCl conversion factor, which is an average of 0.5. Therefore, if

you are using a TDS meter with the NaCl conversion factor, multiply the reading by two, and this will get you a close approximation of the EC level.

EC-to-TDS conversion factor do HM Digital TDS meters use

Most HM Digital TDS meters use the NaCl EC-to-TDS conversion factor, which is an average of 0.5. Some HM Digital meters, such as the COM-100 have selectable conversion factors, so you can choose which one you want to use. For specific meters, please contact HM Digital.

For any query

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