Smart Notes

Helping you get your measurements completed faster

Conductivity Meters

What are the top mistakes when measuring conductivity in liquids?

Equipment selection, improper temperature compensation settings and sample mishandling. These are just a few of the actions that can lead to reading errors in conductivity measurement.

Conductivity measurements are a useful indicator of the amount of dissolved ions present in a water sample and can serve as a measure of water quality. Although conductivity measurements are generally simple and easy to take, mistakes can still affect the validity of the data generated. By understanding and avoiding the most common measurement mistakes, you can help ensure that your readings are accurate and reproducible.

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top 10 Common mistakes to avoid when measuring conductivity

When measuring conductivity with meter and sensor, it is important to carefully follow the user manual for proper equipment use procedures. Here are the ten most common mistakes that are made when measuring conductivity:

1. **Using an unsuitable conductivity sensor.** Sample composition, whether the sensor needs to be durable for field use, and the purity of the water sample should all affect the type of conductivity sensor you choose.
2. **Not understanding the effects of temperature.** Conductivity measurements are strongly affected by the temperature of the sample.
3. **Misunderstanding the temperature compensation (TC) function.** TC will calculate and display the conductivity at the chosen reference temperature. If TC is off, the displayed value is the actual conductivity at that temperature.
4. **Improper temperature compensation settings.** Whether to apply a TC or not, or what type of TC selected can affect the accuracy of your readings.
5. **Taking a conductivity reading before achieving temperature equilibrium.** Conductivity is temperature-dependent, so time must be allowed for the conductivity sensor to equilibrate to the same temperature as the sample.
6. **Using elaborate multi-point calibrations.** According to ASTM, a one-point calibration of the cell constant at a representative conductivity is sufficient for accurate conductivity readings. If the samples cover a large range of conductivity levels, one or more points can be made.
7. **Mishandling low-level conductivity samples.** The stability and purity of the sample and how it is handled can affect the accuracy of the sample reading. Low-level samples can be easily effected by contamination, CO_2 absorption and degassing.
8. **Using calibration standards that are too low.** Low-level standards are prone to contamination and difficult to use successfully. Tighter accuracy can be achieved by calibrating at 100 µS/cm or above.
9. **Improper storage and maintenance of the conductivity sensor.** Improper long-term and short-term storage of conductivity sensors can change the surface and adversely affect their performance.
10. **Not understanding the Total Dissolved Solids (TDS) factor.** Conductivity readings can be used to determine an estimate of the TDS in a sample by applying a TDS factor through the meter setup. This TDS value is an estimate, since the true TDS is determined by gravimetric testing.

Summary

For optimal conductivity measurements, understand and avoid the most common mistakes listed above. Carefully read your equipment user manual for proper procedure prior to use.

Take the guess work out of conductivity measurement. Learn more at www.thermoscientific.com/orionmeters

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