The 7 Most Asked Questions About Conductivity...
1. How do I select the right conductivity sensor?

Checking the following three criteria will help you to choose the right sensor.

1. Chemical resistance: There must be no chemical reaction between the sensor material and the sample.

2. Construction type:
   - 2-pole sensor: Best for low conductivity measurements
   - 4-pole sensor: Best for mid to high conductivity measurements

3. Cell constant: Use a sensor with a low cell constant (0.01 - 0.1 cm\(^{-1}\)) for low conductivity measurements and a sensor with a higher cell constant (0.5 - 1.0 cm\(^{-1}\)) for mid to high conductivity measurements.

At [www.electrodes.net](http://www.electrodes.net), you can find all the necessary information about METTLER TOLEDO sensors.
1. How do I select the right conductivity sensor?
2. What is the difference between a nominal and a certified cell constant?

The cell constant can vary widely due to the sensor’s production process. The nominal cell constant has an accuracy of only ±20% and helps you to choose the right sensor. It is not accurate enough and cannot be used for conductivity measurements. Sensors with a nominal cell constant must be calibrated first.

Certified cell constants are determined after the manufacturing process directly at the plant with traceability according to ASTM and NIST. With a maximum uncertainty of ±2% they are very accurate and can be used for conductivity measurement without the need for calibration. The certified cell constant is stated on the quality certificate, printed on the sensor cable, and stored on the ISM® sensor chip.
3. When do I need to perform a calibration or a verification?

If the exact cell constant is not known, a calibration must be performed. Incase the exact cell constant is known (sensors with a certified cell constant or sensors which have been calibrated previously), then a verification is sufficient.
4. Which temperature correction mode should be used?

Depending on the measured sample, different temperature correction modes should be used:

- **Linear:** Medium to high conducting solutions
  (use a correct a-value)
- **Non-linear:** Natural water
- **Pure water:** Ultrapure water
- **None:** Temperature-controlled samples; conductivity measurements according to certain standards
  (e.g., USP <645>)
5. Should the sample for the conductivity measurement be stirred or not?

In unstirred solutions, measurement drift is possible. In general, conductivity measurements in stirred samples are preferred. The exception is low conductivity samples where stirring can increase exposure to air and carbon dioxide contamination.

Important: Use the same stirring conditions for both calibration or verification and measurement.
6. How do I clean my conductivity sensor?

The sensor should be rinsed after every measurement with deionized water. If the sensor has been exposed to a sample immiscible with water, it should be cleaned with a solvent miscible with water e.g., ethanol or acetone and carefully rinsed afterwards with deionized water. If there is a build-up of solids inside the measuring cell, carefully remove it with a cotton wool bud soaked in detergent solution, and then rinse the sensor with deionized water. Sensors with platinized poles should never be cleaned mechanically, as this could damage the sensors.
7. How do I store my conductivity sensor?

Cleaned conductivity sensors should be stored as follows:

- Short-term storage (< 1 day): dry or in deionized water
- Long-term storage (> 1 day): dry