

Issues with Ion Selective Measurements

There are many ion selective electrodes which might have different causes for a similar issue. It is advised to read first thoroughly the manual of the electrode to be able to solve the problem. In the [manuals section](#) of this support wiki will you find extended manuals that are very useful.

Ion Strength Adjuster

Adding ionic strength adjuster (ISA) to samples and standards ensure that they have a similar ionic strength. This is important because the ionic strength of a solution affects the relationship between activity and concentration (i.e. the measured value). By bringing the ionic strength of all samples and standards to a similar level, the effect of variable ionic strengths on the activity (and therefore the concentration) is minimized, thus reducing measurement error. Many electrode slope issues and measurement instabilities are solved when using ISA.

Interferences

ISE's are not perfect. They do suffer from interferences of other ions to a greater or lesser degree.

The best advice is to consult the ISE table. If there is an ion present in the samples that is listed as an interferent then you will need to think about a few points:

- If the ions you are measuring are greater in concentration than the interferent you can usually ignore it.
- In many instances interfering ions can be eliminated using chemicals.
- You can use incremental techniques, e.g. Known Addition.

Temperature

There is no temperature compensation foreseen for the ion selective measurements although these are sensitive to temperature changes. A difference of 1°C can cause an error of 2%. It is advised to maintain all solutions, standards and samples, at the same temperature during calibrations and measurements. Repeat the calibrations when the temperature has changed to ensure minimal measurement errors.

Report a measurement problem

Very important for all next steps!

- Only fresh calibration solutions should be used!
- All calibration solutions should be maintained at room temperature.

- Rinse the electrode twice between measurements: first thoroughly in distilled water and then with a small amount of the next solution to be measured.
- Always stir the solutions while measuring (use a magnetic stirrer!).
- Allow the electrodes sufficient time to stabilize while measuring (a stability indicator on most of our meters prompts the user when readings should be taken).
- Never calibrate during this test!

We need some information to be able to help. There are several manners to return this information which is requested in the grey box: you can print this page or export it as pdf and fill in the information at the desired location. It is also possible to: **Select and Copy the text in the grey box here below, paste it into a new email message and fill in the requested items before sending it to Consort support (click this to open your email editor).**

Identify your application

- What is/are the main use(s) of the measurement system?
 - (e.g. laboratory, agriculture, waste control, food processing, ...)
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- Type of Ion to be measured:
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Identify your equipment

- Meter:
 - Model:
 - Serial Number:
- Electrode: (see codes on cable or electrode connector head)
 - Model (e.g. ISE27B):
 - Date code (e.g. Oct17) :

Perform the following steps

1. Prepare the ion selective electrode according to its manual (OBLIGED!).
2. Prepare a fresh ISA solution.
3. Prepare a fresh calibration standard of 1000 ppm and add 2% of ISA solution.
4. Prepare a fresh calibration standard of 100 ppm and add 2% of ISA solution.
5. Prepare a fresh calibration standard of 10 ppm and add 2% of ISA solution.
6. Reset the meter (OBLIGED! switch on while holding MODE pressed).
7. Select the mV mode (OBLIGED!).
8. Short-circuit the pH/mV input (e.g. use a metal paper clip), read display: mV
9. Connect ISE electrode, rinse, dip in 10 ppm standard, read display: mV
10. Rinse ISE, dip in 100 ppm standard, read display: mV
11. Rinse ISE, dip in 1000 ppm standard, read display: mV
12. What is the temperature of the solutions? °C
13. If any message occurs, what is EXACTLY shown on the display(s) ?
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<http://www.consort.be/wiki/> - **Support website**

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