ISE Calibration and Measurement

Attention: For Ion-selective Measurements you need an Ion-selective electrode (ISE) and a Reference electrode. In our system this 2 electrodes are combined by means of a “Dual Electrode Head”. Insert the ISE and the Reference electrode in the marked insertion holes. Make sure that they are in the correct holes!

Before inserting the electrodes remove the Rubber protection caps.

ISEs are stored dry and there is no special procedure in removing and putting on the dry Rubber protection cap.

Reference electrodes have to be stored wet. Therefore remove the Rubber protection cap carefully and keep it upright. At the bottom of the Rubber protection cap is **a cotton wool ball which must be kept wet**, so please put some drops of de-ionized water in the cap before you put it on again carefully. Use Paraffin tape to seal the Rubber protection cap before you store the Reference electrode.

Please do not touch the Membrane of ISEs and for demonstration purposes insert the ISEs only into the prepared solutions and water.

Making a measurement: Stir the solution slowly with the electrodes for about 1 minute, then stop stirring and wait till the mV signal is quite stable(about another minute).

1. Prepare 3 Standard solutions in three 250 ml Beakers:
   Fill one 250 ml beaker with 200 ml de-ionised water and dissolve a quarter of a small tea spoon of Copper sulphate crystals in the beaker.
   Label the beaker 1000 ppm.
2. Take out 10 ml of the 1000 ppm solution with a syringe and pour it in a beaker.
   Fill up this beaker with 90 ml de-ionised water (then you have 100 ml of a 100 ppm solution).
   Label the beaker 100 ppm. Rinse the syringe by sucking up de-ionised water twice and pouring it into the wastewater beaker.
3. Take out 10 ml of the 100 ppm solution with a syringe and pour it in a beaker.
   Fill up this beaker with 90 ml de-ionised water (then you have 100 ml of a 10 ppm solution).
   Label the beaker 10 ppm. Rinse the syringe by sucking up de-ionised water twice and pouring it into the wastewater beaker.
4. Have on your desk:
   a) The 3 Calibration beakers.
   b) One 500 ml beaker with 300 ml Tap water for rinsing the electrode shortly when moving from one beaker to another. This procedure avoids contamination by “carry over”.
   c) One empty 500 ml beaker to place the electrode in it, when not used.
   d) One 250 ml beaker for the test sample.
   e) One 500 ml beaker for waste water.
5. Calibrate according to the Analyser manual.
6. Prepare in the sample beaker a sample solution where you increase the concentration between the measurements:
   a) Fill the sample beaker with 100 ml de-ionised water. Measure!
   b) Add with the syringe 2 ml of 100 ppm solution. Measure!
   c) Add with the syringe 2 ml of 100 pip solution. Measure!
   d) Add with the syringe 2 ml of 1000 ppm solution. Measure!