Some More Hints.

Ensure that the temperature of all standards and samples are the same to reduce errors.

Using a magnetic stirrer for laboratory analysis is recommended but not essential. It is however important to have the stirrer set on a low constant speed which must be reproducible for all measurements.

Prior to sample measurement ensure that the electrode is thoroughly rinsed with deionised water. It is worth performing this rinse twice given the possibility of carryover being greatest in high concentration solutions.

Prepare standards by serial dilution.

Make sure your electrode is conditioned by leaving the tip in a 100ppm standard (with ISAB) for 20 minutes prior to analysis.

Methods of Analysis.

Direct Potentiometry is described above. This method is simplified by using a direct reading ion meter. There are several other methods, which are useful.
Known Addition: An incremental technique where the potential of the sample solution is measured followed by addition of a small volume of a higher concentration standard solution. This method is available using a QP459 Ion Meter
Sample Addition: An incremental technique where the potential of a dilute standard solution is measured followed by the addition of a small volume of more concentrated sample.
End Point Titration: ISE's are ideal end point indicators and will produce a significant potential change at the equivalence point.
For more information or advice please visit www.edt.co.uk or email us on : info@edt.co.uk

8221 - Fluoride ISE

Overall Length	155mm
Body Diameter	25mm
Cap Diameter	n/a-3/4" Screw Threads
Connector	BNC
Cable Length	5000 mm
Resistance at 25°C	<2.5 Meg Ohm
Concentration Range	0.02-1,900ppm
Slope	-54 to -59 mV/decade
Potential Drift	2mV Per Day
Operating pH Range	4-8
Temperature Range	5-50°C
Endpoint Time	Typically 10-30 secs
Interferences: Ions with coefficients above 0.001	Hydroxide

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EDT directION
ELECTROCHEMISTRY PRODUCTS

Excellence & Innovation in Electrochemistry

Instruction Manual

8221 - Fluoride ISE

The EDT directION ion selective electrode has a solid-state crystalline membrane with an integral dri-tek reference. The electrode is designed for the detection and analysis of Fluoride ions in aqueous solutions and is suitable for use in the field, in the laboratory and in on –line analysers.

Installation

Connect the ISE to the mV or ion meter. Remove the protective cap and keep it in a safe place.

The ISE can be used immediately but pre soaking for 5 minutes in a 100ppm Fluoride solution (with TISAB) is recommended.

The ionic strength of the standards and solutions should be kept constant between all standards and samples. This is achieved by the simple addition of an Ionic strength adjustment buffer known as TISAB. The strength of TISAB varies so always read the method for information on the appropriate quantity to add.

No temperature correction is possible so ensure standards and samples are measured at the same temperature.

Begin calibration from the lowest concentration standard to avoid cross contamination. Calibration should cover the anticipated range of the samples.

Rinse tip with deionised water between measurements.

Avoid strongly acidic or alkaline samples,and organic solvents.

The EDT directION QP459 Ion meter is ideal for use with the 8221 Fluoride ISE and has a direct concentration mode to display results in ppm units.

Storage and Maintenance

After use rinse with deionised water, wipe clean with a tissue or lint free cloth, replace protective cap and store dry in its box.
If performance becomes sluggish rinse with dilute detergent, solution and immerse the tip in a 1000ppm Fluoride solution for 1 hour.
If the above fails wipe the crystal surface with Methanol or IPA with a Cotton bud. Rinse with de-ionised water afterwards.

Tips For Successful Analysis.

EDT direct*ION* ISE's can be used with any pH/mV meter or Ion meter. If the meter does not have a BNC socket and you have a BNC electrode please contact EDT direct*ION* for the correct adaptor.
Email info@edt.co.uk.
Meters with a 0.1 mV resolution are recommended whilst dedicated Ion meters such as our QP459 Ion Meter will provide direct concentration readouts saving time and effort in constructing calibration curves and performing calculations. Please refer to our website www.edt.co.uk for full advice.
Magnetic stirrers at low speed are recommended for laboratory analysis. Please operate at the lowest speed possible.
Semi-logarithmic (4-cycle) graph paper is required for preparing calibration curves when you are using a mV meter.

Required Solutions.

Distilled or deionised water will be required to prepare Standards, TISABs and to rinse the electrode between measurements.

1000 ppm Stock Standard solution Cat no. 21333.

TISAB. Cat no. 30333. Used to adjust the Ionic strength of all standards and samples. Typical addition is 2ml of TISAB to 50ml of all standards and samples.

Operation

① Connect the electrode to the meter being used for analysis.
② Prepare a series of standards (at least 2) that bracket the expected sample concentration. This is best done by serial dilution of the stock solution. Ideally standards should be a decade in concentration apart e.g. 1, 10, and 100 ppm.
③ Dispense 50 ml of each standard into analytically clean beakers (100 to 150 ml size is perfect)
④ Add TISAB in the appropriate ratio. As a guide with sample concentrations in the 1 to 1000 ppm range 2ml of TISAB to 50 ml sample is satisfactory.
⑤ Rinse the electrode with deionised water and blot dry with a lint free cloth and place in the lowest standard. When the reading is stable record the mV value.
⑥ Repeat step 5 for all subsequent standards proceeding from lowest to highest.
⑦ Plot a calibration curve on semi log paper using mV values on the linear Axis and concentration on the log scale. If you are using a QP459 or other Ion meter the calibration will be automatic.
⑧ Rinse the electrode in deionised water and blot dry. Place the electrode in the sample and record the stable mV value or read the direct display on the Ion Meter
⑨ Using the calibration curve determine the unknown sample concentration.

For Methods, instructional videos and technical help scan the QR Code below:

For more advice, application methods or further information on this product please go to www.edt.co.uk or contact is on info@edt.co.uk