

Applications Advice: Selecting the Right Type of ISE

There are three types of directION ISE all of which have advantages in certain applications or circumstances. It is important to select the correct ISE for your application. The typical situations are listed below with the most appropriate ISE type. When in doubt contact your local directION distributor or e mail info@edt.co.uk for further advice or support.

Half Cell ISE with separate reference:

Traditionally the most common set up with a double junction reference electrode filled with the appropriate filling solution which is usually the ISAB or a dilution of the ISAB.

This set up is ideal in low concentration work where the outer filling solution of the reference can be diluted to minimise Interference or Ionic Strength problems. It is also advisable when several ISEs are being used as this will be both economical and practical. Don't forget, if the reference fails it is fairly low cost to replace. Combination ISE's are more expensive and either a reference or sensor failure will mean a full electrode replacement.

Half cell ISE's are also easier to maintain or polish (crystalline membranes only) and therefore can have a longer lifetime.

Double junction reference electrodes are also slightly faster responding due to the liquid electrolyte but of course do have the disadvantage of needing to be re filled and to be stored wet.

Combination directION ISE with built in driTEK reference:

This is the most practical way to perform Ion analysis in the field and is perfect for non skilled operators. The ISE and reference are combined in one body which is stored dry and requires no or little maintenance.

The connector is a BNC which will fit all meters without having to worry about the configuration of the reference half cell.

Because the reference has a gel electrolyte it is both fairly concentrated and cannot be replenished. This means that working at low levels requires more care (particularly conditioning) and in these cases the Flow Plus or Half Cell options are preferable.

The reference electrolyte cannot be replenished and so the electrode lifetime is less than that of a Half Cell and a reference however the practicality of this set up outweighs any lifetime issues if you need to work in the field or require rapid analysis with unskilled operators.

Flow Plus Combination ISE:

This type of ISE combines the benefits of both of the above options. There is no need for a separate reference as it is a combined unit. It also has a liquid refillable reference which enables low concentration work to be performed but with the added advantage of being stored dry due to the ability to flush clean the electrode after use.

The sensor is also easy to maintain as the electrode can be taken apart and re assembled.

There are only two considerations which are; that you need a reference electrolyte for operation and that it is slightly more expensive than the conventional Combination ISE.