

# Advantage of ISE thick film technology



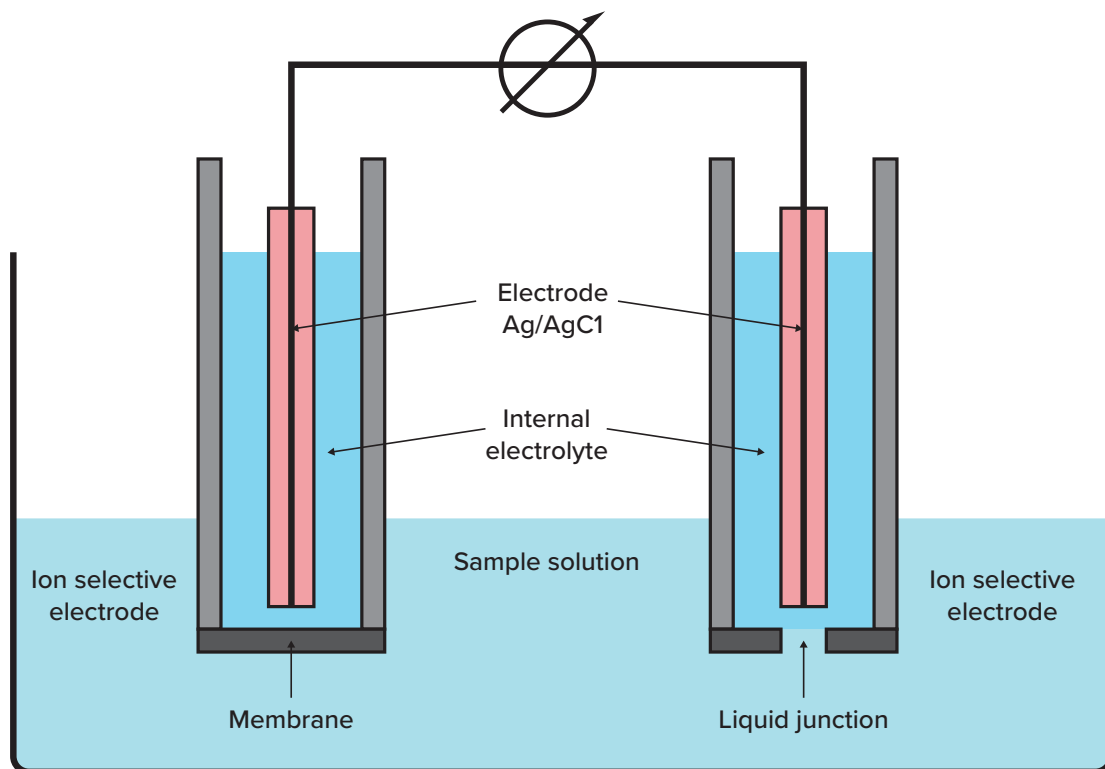
# Introduction

The measurement of ions in whole blood and human plasma is important in the diagnosis and monitoring of various medical conditions. Ion-selective electrodes (ISEs) are commonly used for this purpose due to their simplicity, speed, and accuracy.

The use of thick film ISE sensors as an alternative to classical ISE electrodes for ion testing will be discussed here.

## Ion-selective electrodes

ISEs are analytical devices that can measure the concentration of specific ions in a sample, such as  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$ , and  $\text{Ca}^{2+}$ . They work by measuring the potential difference between a sensing electrode and a reference electrode in the presence of the ion being measured. The potential difference is proportional to the concentration of the ion in the sample.



## Classical ISE electrodes

Classical ISE electrodes consist of a glass or plastic membrane that is coated with an ion-selective material, such as a metal complex or an ionophore. The membrane is mounted on a reference electrode and a measuring electrode, which are connected to a potentiometer to measure the potential difference between the two electrodes. Proper maintenance of classical ISE electrodes is important for ensuring accurate and reliable measurements over time.

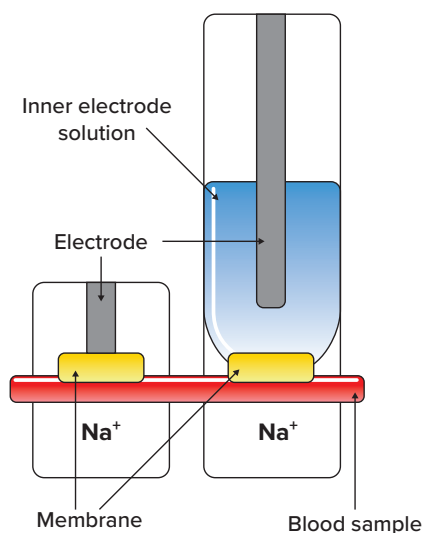
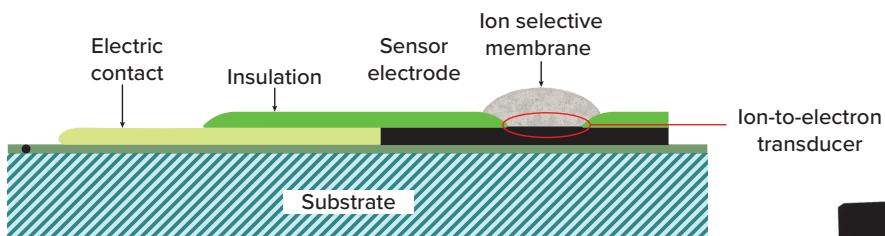


Here are some general maintenance guidelines for classical ISE electrodes:

- 1. Cleaning:** Clean electrodes regularly using a mild detergent solution, such as a 0.1 M sodium hydroxide solution, followed by rinsing with distilled water. Harsh chemicals or abrasive materials that can damage the membrane or sensing surfaces must be avoided.
- 2. Reconditioning:** Recondition electrodes periodically by soaking them in a solution recommended by the manufacturer. This can help to rejuvenate the sensing surface and restore the electrode's response.

## Thick film ISE sensors

Thick film ISE sensors are made using a printing process that deposits a thick layer of ion-selective material on a substrate, such as a polymer, ceramic, or glass plate. The sensor includes the reference electrode, so an operator only has to deal with one cartridge instead of four electrodes and one reference electrode.



# Advantage of ISE thick film technology

## £ Lower cost

Thick film ISE sensors are less expensive to manufacture than classical ISE electrodes, making them a more cost-effective option for many applications. The automated production allows a higher number of sensors to be produced at a very low cost. Clinical performance testing is required for all IVDs.

## 🔧 Low maintenance

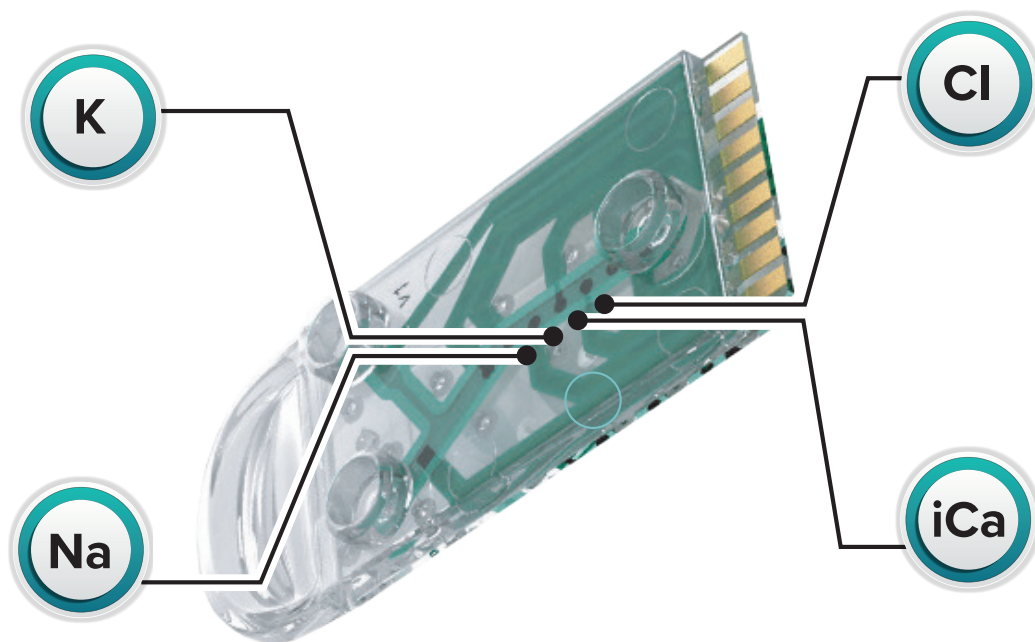
Thick film ISE sensors are low maintenance compared to the electrodes. The automated calibration system takes care of any drift that may occur.

## 🎯 Accuracy and precision

The accuracy and precision of the test results obtained using thick film ISE sensors are comparable to those obtained using classical ISE electrodes. They are in the same quality level and are comparable to established clinical chemistry analyzers.

## The Magic is in the **BIO**sensor

PATENTED TECHNOLOGY



# Conclusion

Thick film ISE sensors are a cost-effective and maintenance-free alternative to classical ISE electrodes for ion testing. They are accurate, precise, and suitable for various medical applications. They offer a simpler and more efficient method of measuring ions in whole blood and human plasma, making them an attractive option for healthcare professionals.



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