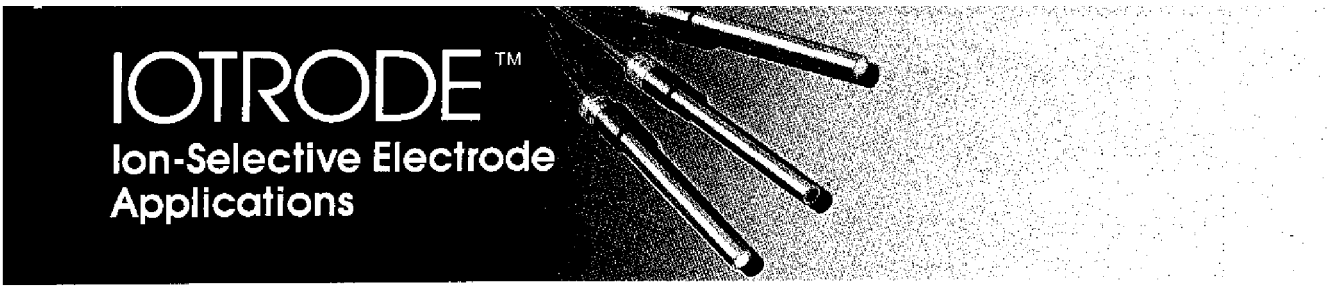


SODIUM ANALYSIS IN PROCESSED FOODS

INTODUCTION

Sodium content of foods has become an important concern in our diet. The Iotron Sodium electrode allows a simple technique for fast routine measurement of sodium.

EQUIPMENT

Meter:

pH/Millivolt meter. Readability of 1 mV required; 0.1 mV preferred. Specific ion meters will provide direct readout of final answer or concentration factor. Consult manual for millivolt measurement instructions.

Electrodes:

1. Iotrode(TM) AB300 Sodium Electrode
2. Reference electrode (Double Junction Type)
   Iotrode AB920 (Ag/AgCl internal) or
   Iotrode AB930 (Calomel internal)

Glassware:

1) 1 ml, 2 ml, and 10 ml pipets
2) 150 ml beakers, plastic
3) 100 ml graduated cylinders
4) 100 ml, 1000 ml volumetric flasks
5) Magnetic stirrer and stirbars or glass stirring rods

REAGENTS

Sodium Standard: In the following analysis, the sample is diluted 1:100. Therefore the sodium standard concentration should approximately equal that of the expected sample concentration. Utilize the following chart to determine the correct amount of sodium chloride needed for preparing one liter of standard.

mg Sodium/100 gm Sample	gm NaCl/Liter Standard
1000	25.4212
100	2.5421
10	0.2542
1	0.0254

Ionic Strength Adjustor: Weigh out 12.1 gm of Tris (Hydroxymethyl) Aminomethane into a one liter volumetric flask. Add approximately 900 mL pf deionized water and 2 mL of 3N HCl. Dilute to mark with DI water.

Reference Electrode Filling Solution: Add 10 grams of KCl to 100 mL of DI water.

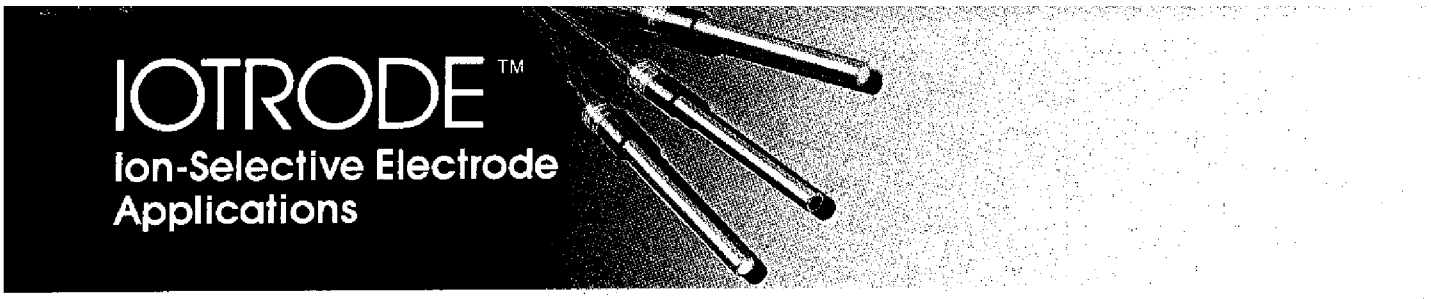
ELECTRODE SET-UP

If the electrode is being used for the first time, soak the electrode in a sodium solution with the approximate concentration it will be used at.
Plug the sensing electrode into the G.E. or Glass jack of the meter. Fill the inner and outer chambers of the reference electrode with appropriate solutions. Plug the reference electrode into the REF or reference jack of the meter.
Technique Hints:

1. Stirring: Electrode response is improved if the samples and standardizing solutions are stirred at a fixed rate during measurements. If magnetic stirring is not available, stir solution one minute with a clean glass stirring rod before measuring.

2. Temperature: The slope of the sensing electrode and the absolute potential of the reference electrode are temperature dependent. Therefore, samples and standardizing solutions should be at the same temperature.

3. Cleaning Electrodes: Rinse both electrodes with a fresh portion of deionized water and blot dry with tissue between all measurements.



ELECTRODE CALIBRATION

The primary criteria for electrode performance verification is the span test. If 54 millivolts or greater change is observed for a decade change in concentration, the performance is considered satisfactory.

1. Put 100ml of ISA into a 150ml beaker.
Place pH meter into the M.V. mode. Place electrodes in the solution to a minimum depth of one inch.

2. Pipet 1ml of sodium standard into the solution.
Stir thoroughly. Read stable electrode potential in millivolts and record value as E1.

3. Add 10ml of sodium standard and stir thoroughly.
Read stable electrode potential in millivolts and record as E2.
Calculate S by E2-E1. Assume S value as the slope of the electrode.

NOTE: If the slope value is below 54 mV, check electrode set up and recondition sensing electrode.

PROCEDURE

Sample Preparation: Weigh out one gram or pipet 1 mL of sample into a 150 mL beaker. Add 100 mL of ISA and place electrodes in the solution to minimum depth of one inch. Read stable electrode potential in millivolts and record as E3.

Standard Addition: Pipet 1 mL of sodium standard into the the solution. Stir thoroughly. Read stable electrode potential in millivolts and record value as E4.