

## THE DETERMINATION OF CHLORIDE POTATO CRISPS

Chloride is determined by the method of dry sample addition where a chloride standard is measured before and after addition of a small sample of crushed and blended potato crisps.

### Equipment Required

1. EDT directIOn pH meter with a millivolt scale
2. EDT directIOn Combination chloride ion selective electrode
3. Mortar and Pestel
4. Accurate balance
5. Sealed containers (100 ml)

### Reagents

1. 0.1 Molar chloride standard
2. 0.2 Molar sodium acetate (**for extraction**)
3. Deionised water

### Standard Preparation

Dissolve 5.844g NaCl in a 1 litre volumetric flask with deionised water and dilute to the mark.

From this prepare  $1 \times 10^{-2}$  and  $1 \times 10^{-3}$  Molar Cl<sup>-</sup> standards by serial dilution. To determine the accurate slope dilute both of these standards 1:1 with 0.2 Molar sodium acetate. Measure the mV potential of each of the resultant standards. The Slope is the difference between the two values. Expect a reading of around -57 mV.

### 2 Molar Sodium Acetate

Dissolve 27.21 g sodium acetate and dissolve in a 1 litre volumetric flask with deionised water.

### Sample Preparation

Weigh accurately 10g of Potato crisps. Grind into a fine powder using a Pestel and mortar. Weigh accurately 1g of the prepared mixture into a 100ml sealable container.

### Method

1. To 25 mls of the  $1 \times 10^{-2}$  Molar Cl<sup>-</sup> standard add 25 mls of 0.2M CH<sub>3</sub>COONa.
2. Measure the mV potential of this solution (mV<sub>1</sub>).
4. Add this solution to 1g of sample in a sealable container (100 ml volume) and shake vigorously for 5-10 minutes.
5. Measure the new potential of this mixture (mV<sub>2</sub>).

### Calculation

$$\% \text{ NaCl in sample (w/w)} = \left[ \frac{C_{st} V_{st} A_v}{M} \right] \left[ 10^{\Delta E/S} - 1 \right] \times 100$$

where: C<sub>st</sub> = concentration of standard (mol dm<sup>-3</sup>)

V<sub>st</sub> = volume of standard in litres

$A_v$  = atomic mass of NaCl (58.44g)

$M$  = mass of solid sample

$\Delta E$  =  $mV_1 - mV_2$ .

$S$  = electrode slope (mV)