

DETERMINATION OF CHLORIDE IN MAYONNAISE

The chloride is extracted from the sample by dissolving in 1 molar nitric acid which also acts as an ionic strength adjustment buffer.

Equipment Required

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| 1. Ion Meter, pH/mV Analyzer, or pH Meter with millivolt scale | 4. Nitric Acid Solution (1M) |
| 2. Chloride Combination Ion Selective Electrode | 5. Glassware: 250ml beaker, 100ml volumetric flask, 250ml volumetric flask, 1Litre volumetric flask, graduated pipette |
| 3. Chloride 1000ppm Standard Solution | 6. Deionised water |

Nitric Acid Preparation

Make a 0.5M Nitric acid (HNO_3) solution by taking 125ml of your 1M nitric acid and diluting with 125ml of deionised water and store in a clean 250ml bottle.

Standard Preparation

Prepare standards of 100, 10ppm by serial dilution of the 1000 ppm standard solution. This is best achieved by pipetting 10ml of the standard into a 100ml volumetric flask and diluting to the mark with the 0.5 molar HNO_3 . This is now a 100ppm standard, repeat this step using the freshly made 100ppm standard to make 10ppm.

Sample Preparation

Weigh accurately 1g of sample and disperse into 500 ml of 1M nitric acid in a 1L volumetric flask. Mix the solution vigorously to ensure complete mixing. Once homogeneous top up to the 1 litre mark with deionised water. Filter the sample solution (22 μm filter would be ideal) into a clean stoppered flask.

Method

Pour 100ml of each of the standards and samples into clean beakers. Be sure the beakers are clean and make sure not to touch the inside of the beakers with bare hands as Chloride contamination from sweat etc. is common. Beakers that have been washed with softened water or tap water will be contaminated. In these cases, rinse the beakers with deionised water.

Immerse the electrode in each of the standards in increasing concentration and plot the response in mV vs $\log(\text{concentration})$ or follow the calibration routine on the ion meter, if available, ensuring to rinse the electrodes with distilled water and dabbing off the excess water between standards. Measure the sample and if necessary plot onto the graph.

Using the ion meter calibration function, if available, will allow the result to be calculated and displayed directly. Some meters allow for up to a 5-point calibration if required.

If you do not have an Ion meter you can read the mV values using a pH/mV meter. Record the mV response and plot a graph of mV vs. \log of Concentration.

Calculation

The result on the display will correspond to mg Cl in 1g of sample. To determine % Chloride in Mayonnaise divide the result by 10.