Palintest Ltd.

Determination of Lead in Maple Syrup

The Palintest SA 1000 Scanning Analyzer provides accurate and precise means of determining lead in a number of sample types. The Following application note describes a method for determining the amount of lead present in a sample of Maple Syrup using the SA 1000.

Test range and units

The SA 1000 Scanning Analyzer gives the test result in terms of micrograms of lead per liter. The range of the test is 2 - 100 μg/l. The result is used to calculate the concentration of lead present by weight in a known weight of sample. The result is most often reported in terms of micrograms per gram (μg/g) milligrams per kilogram (mg/Kg) or parts per million (ppm). These units have the same numerical value and are equivelant to each other.

Equipment and Materials

Analytical Balance (not supplied)
Weighing boat or other suitable vessel (not supplied)
Volumetric flask, 1000ml.(not supplied)
Pipettor, 5 ml
Palintest SA-1000 Scanning Analyzer
Test tubes, 5ml. plastic
Palintest SE-1LW or SE-1 W Electrodes
Palintest SoluPrep SP-A tablets
Tabllet Crushing/ Stirring Rods

The equipment and consumables required (except the volumetric flask) are supplied in the Palintest SA 1000 Scanning Analyzer Standard Kit and electrode pack PT 425.

An analytical balance (not supplied) or other accurate type of balance, will be required for weighing samples for the determination of weight of lead per gram of sample.

Sample preparation

1. Using an accurate balance weigh 1.0g.(+/- 0.01g) of Maple Syrup into a weighing boat or other suitable vessel. Record the weight of Maple Syrup.
2. Carefully wash the Maple Syrup into a volumetric flask using distilled or deionised water. Make the volume up to the mark with distilled or deionised water. Mix thoroughly by inverting the flask several times.
3. Take a 5 ml. screw capped test tube from the Electrode pack. Carefully transfer a portion of the Maple Syrup solution into the tube filling to the 5 ml. mark.
4. Add one SoluPrep SP-A tablet and crush with a clean crushing/stirring rod. Continue to stir

the solution until the tablet is completely dissolved.
5. Replace the screw cap and invert the tube several times until well mixed. Check that the tablet is completely dissolved.

Sample Testing

6. Test the sample with the Scanning Analyzer - see Scanning Analyzer Test Procedure in the SA-1000 handbook. Use an SE-1 Electrode supplied in the SE-1 LW or SE-1 W Electrode pack. Ensure that the correct calibration code shown on the electrode pack is keyed into the instrument. The Scanning Analyzer will provide the test result after a three minute scanning period.
7. The result is displayed as μg. lead/liter
8. To calculate the weight of lead in the sample of Maple Syrup follow the example below:

SA 1000 reading - 40μg. lead/liter
Weight of Maple Syrup - 1.001g
Concentration of lead in Maple Syrup: 40/1.001 = 39.96 μg lead/g or mg/Kg or ppm