

Safety

Lab coats, safety glasses and enclosed footwear must be worn at all times in the laboratory.

Concentrated nitric acid is very dangerous: wear rubber gloves and take care when handling. It will burn your skin, and leave a yellow stain on your skin for some days if it makes contact. If you do splash some on your skin, wash your skin very well with cold running water IMMEDIATELY. Make sure your teacher is told about it.

When you first add nitric acid to your sample, it will likely give off a brown gas (NO₂) and a white precipitate (see safety notes).

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Potassium periodate solid: KIO₄. You will need about 5g of this at most.

Potassium permanganate solid: This will be used to create standard solutions for colour comparison.

Method:

A. Sample Preparation

1. If you are using a solid pellet (or slow release fertilizer), then you will need to dissolve it. Accurately weigh 5 g of solid fertilizer into a 250 mL conical flask, and **in a fume hood** add 20 mL of concentrated nitric acid. There may be a toxic brown gas given off here. Heat this gently in the fume hood with supervision until the sample has liquefied (Note that it might not dissolve. All we need is for the fertilizer to be liquid).

Transfer the liquid to a 250 mL volumetric flask and dilute the sample to 250 mL.

2. If you are using a liquid fertilizer, shake it well, then pipette 5 mL into a 250 mL volumetric flask and dilute.

B. Oxidation to permanganate

1. Pipette a 20 mL sample of your diluted fertilizer into