Procedures for Preparation of Nitrate (NO$_3^-$) Standard Solutions

Materials
Potassium Nitrate (Analytical/Reagent Grade or better, brand new sealed dry bottle preferred) CAS 7757-79-1
Potassium Chloride (Analytical/Reagent Grade or better, brand new sealed dry bottle preferred) CAS 7447-40-7
1 Liter Volumetric Flask (one each)
5 Liter Volumetric Flask (one each)
1 mL volumetric pipette
10 mL volumetric pipette
100 microLiter pipetters (or alternate 0.100 mL dispenser)
1 liter opaque plastic bottles with air-tight sealing cap (six each)
DI Water (18 MegaOhms or higher resistivity grade)

- ENSURE THAT ALL GLASSWARE IS CLEAN AND DRY BEFORE PROCEEDING.
- THOROUGHLY CLEAN EACH VOLUMETRIC FLASKS AFTER PREPARING ANY SOLUTION WITH DI WATER.
- SOLUTION PREPARED FROM THIS PROCEDURE WILL STAY GOOD FOR 1 YEAR FROM DATE OF MANUFACTURE IF STORED IN AN SEALED, OPAQUE PLASTIC BOTTLE IN COOL DRY LOCATION

Stock Solution Preparation Procedures:

Preparation of 0.01 Molar Potassium Chloride background solution (DO THIS FIRST!):
1. Measure out 3.728 grams of potassium chloride
2. Place this potassium chloride into a 5 liter volumetric flask.
3. Dilute with DI water to 5 liter mark. Mix solution well until all potassium chloride is dissolved.
4. Seal 5 liter volumetric flask with glass stopper. Label flask appropriately.

Preparation of 10,000 ppm Nitrate stock solution:
2. Place this potassium nitrate into 1 liter volumetric flask.
3. Dilute with DI water to the 1 liter mark. Mix solution well until it is completely homogeneous.
4. Transfer this 10,000 ppm nitrate stock solution to a 1 liter plastic bottle and label appropriately.

Chloride Calibration Solution Preparation Procedures:

Preparation of 1 ppm Nitrate Standard Ion Solution
1. Draw 0.10 mL of 10,000 ppm nitrate stock solution and transfer to a 1 liter volumetric flask.
2. Dilute with 0.01 Molar potassium chloride background solution to the 1 liter mark. Mix solution well until it is completely homogeneous.
3. Transfer this 1 ppm nitrate calibration solution to a 1 liter plastic bottle and label appropriately.

Preparation of 10 ppm Nitrate Standard Ion Solution
4. Draw 1 mL of 10,000 ppm nitrate stock solution and transfer to a 1 liter volumetric flask.
5. Dilute with 0.01 Molar potassium chloride background solution to the 1 liter mark. Mix solution well until it is completely homogeneous.
6. Transfer this 10 ppm nitrate calibration solution to a 1 liter plastic bottle and label appropriately.

Preparation of 100 ppm Nitrate Standard Ion Solution
7. Draw 10 mL of 10,000 ppm nitrate stock solution and transfer to a 1 liter volumetric flask.
8. Dilute with 0.01 Molar potassium chloride background solution to the 1 liter mark. Mix solution well until it is completely homogeneous.
9. Transfer this 100 ppm nitrate calibration solution to a 1 liter plastic bottle and label appropriately.

Preparation of 1000 ppm Nitrate Standard Ion Solution
10. Draw 100 mL of 10,000 ppm nitrate stock solution and transfer to a 1 liter volumetric flask.
11. Dilute with 0.01 Molar potassium chloride background solution to the 1 liter mark. Mix solution well until it is completely homogeneous.
12. Transfer this 1000 ppm nitrate calibration solution to a 1 liter plastic bottle and label appropriately.