1.0 Purpose

To describe how to verify that magnesium sulfate heptahydrate samples are below the USP limit of 0.014% chloride following USP Monograph: Magnesium Sulfate, and General Chapter <221>

2.0 Scope

This procedure applies to USP lot change, stability testing, and any time USP quality needs to be verified. All USP testing is performed in the Quality Assurance laboratory.

3.0 Responsibility

QA Lab personnel are responsible for USP testing.

4.0 Safety Considerations

Safety Goggles, Chemical Resistant Gloves, and Lab Coat should be worn.

Safety is a condition of employment. Employees are not authorized to work in an unsafe manner and are prohibited from harming the environment of the facility or community.

5.0 Materials/Equipment

- Balance-Mettler Toledo X5105Du, B13929Z316
- Weigh Paper
- 2 - 50 ml Nessler Low Form Color Comparison Tubes (labeled ‘test’ and ‘control’ respectively)
- Stir Rod or Spatula (long enough for color comparison tubes)
- Portable Lamp – Lampi Fluorescent
- Eppendorf 1000 µL Adjustable Pipette
- Timer
- Black Sheet of Paper

Reagents:

- Silver Nitrate Test Solution (0.1N)
- 70% Nitric Acid
- DI H_2O
- 0.020N Hydrochloric Acid Volumetric Solution

6.0 Procedure

1. Weigh out 1.0 g of the magnesium sulfate sample (for magnesium sulfate solution use 273 µL or 1182 µL for Greendale liquid) on a weigh paper and add it to the 'test' color comparison tube and dissolve with approximately 40 ml of DI H2O.
2. In the 'control' color comparison tube add 200 µL of 0.020N hydrochloric acid volumetric solution.
3. Add 1 ml of 70% nitric acid, 1 ml of silver nitrate TS and sufficient water to make 50 ml to each tube.
4. Mix and let stand for 5 minutes protected from direct sunlight.
5. Compare the turbidity of the 'test' sample to the 'control' sample. View the tubes horizontally across the diameter of the tubes, against the dark background of the black sheet of paper with the aid of the portable lamp directed at a right angle against the sides of the tubes.

   If the 'test' sample shows less or the same turbidity as the 'control' sample then the magnesium sulfate sample has a chloride concentration below the USP limit of 0.014% (520 ppm for magnesium sulfate solution or 120 ppm for Greendale liquid).

7.0 Reference Documents

N/A

8.0 Change Information

Minor correction made to acceptance criteria, making it more in line with USP specification by including upper limit.