1.0 Purpose

To describe how to determine the pH of magnesium sulfate heptahydrate in solution following USP Monograph: Magnesium Sulfate, and General Chapter <791>.

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

Wear safety glasses and lab coat when working in the lab.

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

- pH Meter System – VWR SB-20
- Balance – Mettler Toledo X5105Du, B13929Z316
- 150 ml Beaker
- Supply of De-ionized Water
- Supply of Buffer Solutions – pH 4.00, 7.00 and 10.00
- Magnetic Stirring Plate
- Magnetic Stirring Bars – 1” length
- Sheet of 8½” x 11” office letter paper

6.0 Procedure

The pH system should be calibrated once per working day.

1. (*NOTE:* If using *Test Solution* from USP Identification Test, skip to step 3). Weigh approximately 5.00 g of the sample on a piece of paper using the analytical balance.
2. To a 150 ml beaker add 100 ml of H_2O.
3. Place the beaker on the magnetic stirring plate and add the sample.
4. Add a stir bar to the beaker and turn stirring plate on (½ to ¾ max. setting).

5. Remove protective laboratory film from the probe tip, remove probe tip from storage solution, rinse the tip with de-ionized water, and wipe with paper towel.
6. When the sample has completely dissolved, place the probe in the solution and turn on the pH meter.
7. Record the pH value one minute later. The level will have stabilized sufficiently in that interval.
8. Remove probe, rinse with de-ionized water, place back into storage solution and replace the protective laboratory film.

The pH of magnesium sulfate heptahydrate should be between 5.0 and 9.2 in a 1 to 20 solution.

Calibration and Maintenance of the VWR Model SB20 pH meter (daily and weekly):

Daily Calibration:

1. Place the pH electrode into the pH 4.0 calibration buffer.
2. Press lower left key on the pH meter to turn the unit on.
3. Press the cal key and “calibrate” will be displayed in the lower field. “P1” will be displayed indicating it is ready for the first buffer point.
4. When “ready” flashes, record that value on pH Meter Calibration Log. And press “ok” to accept the pH value. “P2” will then be displayed.
5. Rinse the electrode with distilled water and place the electrode into the pH 7.0 buffer.
6. When “ready” flashes again, record that value on pH Meter Calibration Log and press the “ok” key. “P3” will then be displayed.
7. Rinse electrode with distilled water and place the electrode into the pH 10.0 buffer.
8. When “ready” flashes again, record that value on pH Meter Calibration Log and press the “ok” key.
9. The display will freeze for 2 seconds, and then the slope will momentarily be displayed. Record the slope on pH Meter Calibration Log. The slope should be between 92-102%.
10. Meter will automatically advance to the measure mode. Rinse electrode and place into sample or storage solution.

Weekly Maintenance:

To be done before daily calibration

1. Inspect the electrode for scratches, cracks, salt/crystal build up, or membrane/junction deposits.
2. Rinse off salt build up with distilled water and remove any other deposits as indicated in manual.
3. Replace storage solution.
4. Record maintenance completion on pH Meter Calibration Log along with calibration data.

7.0 Reference Documents

N/A

8.0 Change Information

Updated using *SOP Template Instructions (Q12-PR-100-004)* and *Document Numbering (Q12-PR-100-003)*