
	GILES CHEMICAL ~ PREMIER MAGNESIA		
	Company Procedure		
	Title: Filterability of Crude MgSO4 Brine	Number: L12-PR-200-044	
	Owner: Hunter Douglas	Revision: 03	
	Effective Date: 10/15/2015	Page: 1 of 2	

1.0 Purpose:

Magnesite (MgO) is one of the key components in the production of MgSO₄. Due to the fact that MgO is a naturally occurring mineral, it possesses certain insoluble compounds which must be removed through filtration to obtain pure MgSO₄. The purpose of this procedure is to determine the filterability of MgSO₄ brine (liquid) and to help determine the difference (if any) between MgO received from different sources.

2.0 Scope:

This procedure is to be used as a quality check and for investigational purposes. It is to be performed at intervals specified by management and if there is a noticeable change in the filter press' ability to filter raw MgSO₄ brine.

3.0 Responsibility:

A Quality Associate or designee is to perform this procedure.

A member of production will be responsible for collecting a sample for testing.

4.0 Safety Considerations:

Proper PPE should be worn at all times during this procedure. Including but not limited to gloves, safety goggles, and lab coat.

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:

Equipment:

- 500mL plastic bottle
- Hydrometer
- 150 ml Glass Beaker
- 250 ml Plastic Laboratory Cup
- Microwave
- Thermometer
- 250mL Graduated Cylinder
- Buchner Funnel

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- 250mL Filter Flask
- Vacuum Pump
- 361 Qualitative Filter Paper
- Stop Watch

6.0 Procedure:

- If possible, record the origin/railcar # of the MgO used to create the brine.
- Have a member of production take a sample consisting of 400 ml or more to the laboratory.
- Use a Hydrometer or some other method to measure the specific gravity - Sample is to be between 1.320 and 1.395 (if the specific gravity is too high, add hot water to bring it into range, this will prevent crystals from forming during cooling).
- Place 200 ml of brine into a glass beaker and heat in the microwave until sample reaches 70°C.
- Prepare the vacuum filtration apparatus and start the pump.
- Pour the sample over the filter while simultaneously starting the stop watch.
- Filter the sample for exactly 3 minutes while maintaining the vacuum pressure by adjusting the needle valve at 5 inHg (125 mmHg).
- Measure the volume of the filtrate and record the value. Use the equation below to determine the % filterability.

$$\frac{\text{Volume of Filtrate (mL)}}{200 \text{ mL}} \times 100 = \% \text{ Filterability}$$

7.0 Reference Documents:

N/A

8.0 Change Information:

General Update

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