
	GILES CHEMICAL ~ PREMIER MAGNESIA		
	Company Procedure		
	Title: Filling and Starting a Crystallizer	Number: P12-PR-200-028	
	Owner: Patrick Owen	Revision: 6	
	Effective Date: 5/13/13	Page: 1 of 3	

1.0 Purpose

To explain how to properly start a crystallizer. First, it is emptied of any water, filled from the bottom, and slowly brought to operating condition for production.

2.0 Scope

This procedure applies to all manufacturing workers.

3.0 Responsibility

Lead Operator, Material Handler

4.0 Safety Considerations

Safety shoes and safety glasses are required when working in, on, or around the crystallizers.

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

N/A

6.0 Procedure

To start a crystallizer, it is emptied of any water, filled from the bottom, and slowly brought to operating condition for production.

1. Fill the Crystallizer



Drain the elbow with the elbow drain and close it.

Note: Condensation can form in elbow and make it look like the seal is bad – only verify seal if the crystallizer is completely empty

- a) Open the bottom valve on the crystallizer to ensure it has been drained.
- b) Connect a hose from the Brine Storage Tank discharge valve to the Liquid Load Pump.
- c) Connect the outlet of the Liquid Load Pump to the bottom of the crystallizer.
- d) Open the Brine Storage Tank discharge valve and start the Liquid Load Pump.
- e) Begin filling the crystallizer with brine.

Controlled Document

Only those quality documents viewed through the Giles Chemical electronic Documentation System are officially controlled. All other copies, whether viewed through another computer program or a printed version, are not controlled and, therefore, the Quality Unit at Giles assumes no responsibility for the accuracy of the document.

	GILES CHEMICAL ~ PREMIER MAGNESIA		
	Company Procedure		
	Title: Filling and Starting a Crystallizer	Number: P12-PR-200-028	
	Owner: Patrick Owen	Revision: 6	
	Effective Date: 5/13/13	Page: 2 of 3	

- f) Adjust the density with the water valve on the Brine Storage Tank so that you fill the crystallizer with 1.33 – 1.35 density material.
When the level goes above the elbow, (about 120 inches), start the elbow pump (Elbow speeds are posted on the elbow pump drives)
 When the liquid reaches 165 inches, close the bottom valve.
- g) Stop the Liquid Load Pump and close the Brine Storage Tank discharge and water valves.
- h) Uncouple the hoses and clean up.

2. Start the Crystallizer



- a) Ensure the small condenser pump is running.
- b) Start the large condenser water pump and the mass flow pump.
- c) Start the vacuum pump.
- d) Ensure the steam is on the steam jet.
- e) Put the vacuum set point on 0.85" Hg.
- f) The temperature will begin to drop. When it gets to 30 deg C., (temperature reading from mass flow meter and/or production screen) crystals will appear in the sight glass.
- g) The crystallizer is now ready for start up.

3. Using the Heat Exchanger

- a) Ensure Crystallizer discharge is connected.
- b) Set the set point on the discharge control to 14 gpm.
- c) At the heat exchanger, connect crystallizer discharge to exchanger feed (open feed valve).
- d) Close the exchanger sample and drain valves.
- e) Open the valve to the Mother Liquor Tank.
- f) Open Crystallizer discharge valve (and close Crystallizer Solids Sample valve) and let flow stabilize.
- g) At exchanger, verify flow by opening the exchanger's sample valve.
- h) Ensure the condensate valve is fully open.
- i) Open steam valve completely.
- j) Watch the controller screen and feel the pipe to ensure discharge is heating up.
- k) When the density in the Crystallizer reaches 1.39, close the discharge valve and wash through the system.
- l) Go to the exchanger, close the valve to the Mother Liquor tank, and open the valve to the Brine Feed Tank (middle valve).
- m) Close the wash water and open the discharge valve
- n) Add about 4 gpm of Mother Liquor and add or reduce brine as needed to maintain level.
- o) Continue running until crystals are large enough to dry well.
- p) When ready for dryer, divert the discharge to the mother liquor pot.

Controlled Document

Only those quality documents viewed through the Giles Chemical electronic Documentation System are officially controlled. All other copies, whether viewed through another computer program or a printed version, are not controlled and, therefore, the Quality Unit at Giles assumes no responsibility for the accuracy of the document.

	GILES CHEMICAL ~ PREMIER MAGNESIA		
	Company Procedure		
	Title: Filling and Starting a Crystallizer	Number: P12-PR-200-028	
	Owner: Patrick Owen	Revision: 6	
	Effective Date: 5/13/13	Page: 3 of 3	

- q) Turn on the wash valve to the heat exchanger.
- r) Close the steam valve.
- s) Wait about 2 minutes to ensure water has washed the line to the Brine Feed Tank.
- t) Open sample valves and close wash valve.
- u) Let the exchanger and lines drain through the sample valves.
- v) Close valve to Brine Feed Tank
- w) Swap hose to Centrifuge.

7.0 Reference Documents

N/A

8.0 Change Information

Document review- updated format using new template and numbering system.

Controlled Document

Only those quality documents viewed through the Giles Chemical electronic Documentation System are officially controlled. All other copies, whether viewed through another computer program or a printed version, are not controlled and, therefore, the Quality Unit at Giles assumes no responsibility for the accuracy of the document.