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|---|------------------------------------|---------------|----------------------------------|
|  | GILES CHEMICAL                     |               |                                  |
|   | COMPANY PROCEDURE                  |               |                                  |
|   | Dumping and Washing a Crystallizer | Page : 1 of 4 | Revision : 01<br>Date : 7/8/2009 |
|   | Author: Patrick Owen               | Job Specific  |                                  |

**Personnel responsible:**

1. Lead Operator

**Safety:**

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

**Summary:**


This procedure covers dumping and washing a crystallizer. When dumping, it is important to take enough time to wash the crystallizer thoroughly or it will not run long before dumping is required again.

**A. Dumping a Crystallizer**


1. Shut down the crystallizer (see procedure - Crystallizer Extended Shut Down)
2. Connect a steam hose to the bottom valve.
3. Open the bottom valve and open steam valve.
4. Steam until the temperature reaches 50 degrees C.
5. Stop the density loop pump and wash out the density loop.
6. Close steam valve and bottom valve – blow out steam hose.
7. Connect a hose from the bottom valve to the Liquid Load Pump.
8. Connect the outlet of the Liquid Load Pump to the Mother Liquor or Peco Tank.
9. Open the bottom valve and start the Small Press Pump.
10. Begin emptying the crystallizer.
11. Once the level gets below 100 inches, stop the elbow pump.
12. Empty the crystallizer completely.
13. Connect the hose to the elbow drain and pump that into the ML or Peco tank.
14. Once the elbow is empty, uncouple the hose and stop the Liquid Load Pump.
15. Clean up.
16. Leave bottom valve and elbow drain open to ensure crystallizer is empty.

**B. Washing the Crystallizer**

1. Close the bottom valve.
2. Using the hot water at the density loop washout, begin filling the crystallizer with hot water.
3. After the hot water begins flowing out of the elbow drain, close the elbow drain valves.
4. Fill the crystallizer to 185 inches and shut off the hot water.
5. Start the elbow pump.
6. Start the density loop.
7. Ensure the water is at least 60 degrees C, if not, steam the crystallizer until it is.
8. After the crystallizer is at least 60 degrees C and is circulating, let it circulate for at least 5 hours.
9. Look into the top of the crystallizer and ensure that all the chunks have been dissolved.
10. Stop the density loop.
11. Stop the elbow pump.

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12. Drain the crystallizer to the drain through the bottom valve and the elbow drain.
13. After the crystallizer is empty, shine a light in all the sight glasses at the bottom to make sure everything is drained.
14. Wash the last little bit of residue out the drain valve with the level probe washout.
15. As needed see "Filling and Starting a Crystallizer".

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## TRAINING DOCUMENTATION

|    | EMPLOYEE | TITLE | SIGNATURE | DATE |
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