

## FXTRUSION STARTUP

## RECOMMENDED PROCEDURE FOR VI-CHEM CORPORATION PRODUCTS

The following recommendations are made to help insure a safe, productive profile extruder startup

using Vi-Chem Corporation Compounds. Before you start any extrusion line, know the safety limits of

your machine and materials with respect to amperage, pressure, and temperature.

- 1. The machine and die should be empty and clean. Pull the screw to make sure that the right screw is in the machine and that it is clean. Inspect behind the mixing pins and in the mixing sections for material hang-up.
- 2. The machine hopper should be free of material during the machine heat up.
- Fill and start the preheaters and hopper dryers.
- 4. All mating and sealing surfaces (breaker plate) should be clean and true to prevent leaks, sites for hang-up, or dead spots. Once PVC stops moving through the process equipment, it will burn. No amount of heat stabilizer can stabilize a PVC compound from burning at a dead spot.
- Set the startup conditions based on your product-processing standard. Set the die temperature 10°F lower than the required standard temperature. Do not turn on the screw temperature control yet.
- 6. Pay close attention to the amount of machine heat up time. Too much soak time can cause black specks in the finished product, and too little soak time can result in a hazardous cold start condition. Allow for a 30-minute soak after reaching barrel and die set temperatures.
- 7. Attach the die, breaker plate, and screens. Make sure to alternate the tightening of die bolts. The die, breaker plate, and adapter must sit square and true to avoid leaks.
- 8. As the machine comes up to the set temperature and while the machine is soaking:
- a. Check for an unrestricted flow of water through the feed throat block, lubricating oil cooling circuit, and barrel cooling circuit.
- b. Clean the vent ports, sight glasses, and filters on the barrel zone cooling blowers if necessary.
- c. Check that the heater bands are tight, that the thermocouples are bottomed out, that the heater bands and thermocouples are plugged into the proper receptacles, that the temperature controllers are functioning properly, and that the pressure transducer is connected correctly. CONTINUED



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## EXTRUSION STARTUP - CONTINUED

- d. Check that the downstream equipment is working properly. Check that the electrical, air, and water circuits are functioning, that the heat exchanger thermostats and solenoid valves are working, and that the heat transfer medium is flowing freely.
- Retorque the die bolts when the machine is up to temperature.
- Make one final inspection of the line.
- Open the hauloff nip to allow passage of irregular extrudate.
- Fill the hopper with material.
- 10. Make sure no one stands in front of the die during startup. Only when material is flowing through the die, and the amperage and pressure are under control, is it safe to stand in front of the die.
- 11. Make sure the screw speed control is set at zero, then start the extruder drive.
- 12a. Start the screw slowly (5-10 RPM). Once material is flowing through the die, increase RPM, as the amperage and head pressure allow, until the required output is realized.
- 12b. When running harder materials it may be desirable to startup with the gate open until a free flowing melt is realized. The screw is then stopped and the gate is quickly closed and bolted.
  With the die buttoned up, repeat steps 11 and 12a.
- 13. Set the die temperature at the required standard temperature.
- 14. Turn on the screw temperature control.
- String the line and close the pull rolls after all lumps have gone through the puller.
- 16. For the most efficient startup, do not change process conditions from the standard. Control the profile with downstream equipment while the process stabilizes. Once stabilized, if a process change is necessary, make one change at a time and allow at least 15 minutes for the change to stabilize in order to accurately measure the response to the change. Update the process standard if warranted.
- 17. Keep the startup scrap clean for reuse or recycle.
- 18. Once the process is stable, check that the process conditions are holding at the set points.
- Make a record of the machine conditions every time changes are made.
- Make a routine check of the machine conditions every hour and record them. V

