

## Start-Up, Shutdown, & Tooling Maintenance Procedures for Geon<sup>®</sup> Vinyl Rigid Molding Compounds

Addressing the following list of suggestions will be helpful in processing Geon<sup>®</sup> Vinyl Rigid Molding Compounds, providing protection for your tooling and machinery, and providing standard guidelines for your start-ups. These will serve as direction for better and more consistent product quality.

### START-UP

- Clean the two mold halves thoroughly using a good recommended cleaner.
- Make sure all vents are thoroughly cleaned and free of any pre-applied rust preventive, dirt or material build-up causing them to be inefficient.
- Address all water leaks and check for adequate water flow through the tooling.
- Review your process sheet for the proper mold temperature settings.
- If needed, use mold release sparingly. Mold release will also restrict vents.
- Clean and polish the sprue bushing. Check for rough spots.
- Review your process sheet for setup and startup conditions. Cover all the details.
- If no previous process sheet exists, refer to the Processing & Equipment Guide for Geon<sup>®</sup> Vinyl Molding Compounds for suggested molding parameters.
- Start the press up by running a purge material through the barrel. Recommended purge materials are natural ABS, natural polystyrene, or a commercial purge (e.g. Dynapurge<sup>®</sup> or CylaPurge<sup>®</sup>)
- Screw RPM should be checked and set during initial startup on purge material.  
**IMPORTANT DETAIL:** Final screw RPM should be determined during the molding cycle.
- The back pressure should also be checked and set during initial startup on purge material or after the first shot into mold. (Normal suggested startup back pressure should be 50-75 psi)
- After acceptable conditions have been obtained with the purge material, switch hopper to feed the vinyl compound.
- The melt temperature should be checked by using a hand pyrometer and needle probe in an air shot prior to shooting into the mold. If melt temperature is close to or above 400° F reduce melt temperature. Recheck melt temperature after machine stabilizes in

a production mode, maintain 390-410° F melt.

- Check the nozzle orifice and sprue orifice for match up.
- Check heater zones for over ride and correct settings.
- Move barrel forward to start molding parts.
- Check and adjust injection pressures. Use medium pressure range to start.
- Review the injection velocities. Slow to moderate to start. Adjust up or down as needed.
- Adjust pressures and timers to produce acceptable parts.
- Repeat cleaning the tooling after 5 to 10 cycles, if needed.
- If it is necessary to stop the machine for more than half an hour, intermittent purging of the vinyl in the barrel and screw should be done.
- Neutralizer should be applied during short shutdowns and cleaned off at restart.
- Mold temperatures should be checked with a hand pyrometer and surface probe.

## **SHUTDOWN**

- Purge barrel and screw clean with suitable purging compound – natural ABS, natural polystyrene, or commercial purge such as Dynapurge®. CylaPurge® should only be used between color changes and not for production shut-down because it contains a blowing agent mixed with a vinyl polymer. You do not want to shut-down a press with vinyl in the barrel.
- Neutralize mold surfaces and runner blocks, including sprue bushing.
- Suitable mold preservative should be applied after neutralizing.
- **RECORD YOUR PROCESSING CONDITIONS FOR FUTURE USE**

**WARNING:** It is important that vinyl compounds and acetal or acetal copolymers, such as Delrin® or Celcon®, never come in contact with each other at processing temperatures. At processing temperatures, the two materials are mutually destructive and will react violently.

## **TOOLING MAINTENANCE**

PolyOne recommends that ONCE PER DAY, the 1<sup>ST</sup> shift operator at the beginning of his/her shift interrupt the production cycle.

- Open press and spray both mold halves, vent grooves, and parting line face with a good mold cleaner. Then wipe off.
- Manually advance injector box so injection pins are fully extended.

- Spray injector pins, cavity, core and parting line face with a spray neutralizer (Slide<sup>®</sup> Neutralizer or equivalent).
- Manually retract and advance injector box several times to work neutralizer down injection pin bores.
- Spray both mold halves with a good mold cleaner and wipe neutralizer off core, cavity, vent area and parting line faces.
- Manually advance injectors again and spray down with good mold cleaner or electrical contact spray cleaner. This will flash off the oils of the neutralizer spray on the injector pins and injector pin bores.
- Pull nozzle away from mold, empty the barrel, make up next shot, move barrel injection unit forward, and resume production.

When the injection machine press operators are taught how to perform the above neutralizing process daily, tooling will require much less scheduled maintenance downtime. The mold vents and injector pins are to be wiped off and cleaned daily. This will allow for more consistent molding of rigid vinyl parts.

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