

# Follow These Steps to Purge Accumulator-Head Blow Molders

Preventive purging with a commercial product between resins or colors and during normal shutdown and startup cycles can prevent excessive loss of resin and production time.



Natural HDPE blow molded vessels made by ThermoFisher Scientific shown here are finished with injection molded closure.

If you operate accumulator-head blow molders, most likely you have tried to reduce the loss of time and material created by

color changes, material changes, streaks and contamination. Success and

efficiency of purging your machine depends on the proper care of your machinery and following the purging procedures for a product that is designed for your needs.

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Large blow molding machines at ThermoFisher Scientific's Rochester, N.Y., facility routinely use Dyna-Purge F2 product for cleaning heads and extruder screws. ThermoFisher molding personnel say this practice reduces black-speck contamination after the machine comes out of a scheduled shutdown. Recommended purging procedures outlined in this article deliver significant time savings and reduce resin waste during startup, says ThermoFisher.

There are a number of considerations worth mentioning that are necessary for a positive purging outcome on any blow molding machine with accumulator heads. Let's review them now:

- **Temperature:** The first thing you have to ensure is that your heating and cooling functions are working properly on your barrel, screw and accumulator head. Issues in this area are commonly overlooked. One of the inspections you should conduct to ensure that the temperature readings are accurate is a planned maintenance inspection using a hand-held, quick-response probe. These devices are a good option to check and ensure your machines temperature controls are performing properly.

- **Startup and shutdown purging:** In addition to color and material changes, shutdown purging is a good practice to follow. Using a commercial purging compound when shutting down is the best way to give your machine a thorough internal cleaning, even if you are running the same color. A very important step to purging an accumulator head is making sure you are following machine-manufacturer and commercial purging-compound instructions while overfilling your machine to accumulator-head capacity.

• **Purging procedure best practices:** In addition to the machine manufacturer procedures and purge-compound instructions, here are some “best purging practices” made simple.

1. Ensure that your machine’s temperature controls are working correctly and have set them to the purging compound’s specified temperatures. Helpful hints: Your product may have a “sweet-spot,” say in the middle of the temperature range. Increasing temperatures on the head/die by 50° F (10° C) may improve purging results.

2. Confirm that your system is clean with no chance of further contamination. Helpful hint: Have a checklist to ensure proper techniques are used to thoroughly clean the feed system.

3. Set your die gap open enough to let material flow out as you fill the head with purging compound. When you see the purging compound begin to appear, you can slowly close your tooling while filling, until you seal enough so that you can achieve 100% head fill. Helpful hint: Keeping die gap restricted during purging increases head backpressure, allowing for more aggressive cleaning.

**Using a commercial purging compound when shutting down is the best way to give your machine a thorough internal cleaning, even if you are running the same color.**

5. Reduce the extruder speed from its normal operating speed. Helpful hint: Start your extruder at around 20% or lower each time

### QUESTIONS ABOUT PURGING?

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The value of purging is especially beneficial when shutting down for an extended amount of time, like a weekend. Thermo Fisher fills the barrel with Dyna-Purge to prevent oxidation, a major cause of degradation. As the machine cools, Dyna-Purge will solidify and shrink, pulling residue away from the barrel walls.

4. Put enough purging compound in your machine to fill your head and extruder. Helpful hint: Measure the amount it takes to fill the machine and keep that posted for other operators.

you re-start extruder and slowly increase while monitoring pressure indicators during all steps.

6. Fill with purging compound until your head and barrel are full. Wait the suggested amount of time at the suggested temperatures for the purge compound.

7. Follow with a virgin resin chaser or your normal production resin to remove the purging compound (post-purge) from the machine. Verify you are clean with quality-assurance first-article approval and begin your production. Helpful hint: Have a clean part that will pass inspection for comparison.

8. Depending upon machine age and condition prior to purging, more than one fill (or full cycle) of purge compound may be necessary to achieve a clean state. Helpful hint: Pre-measure the standard amount plus one additional barrel capacity so you have extra available and ready to repeat.

• **Tool-Less Purge:** In preparing to use a compound due to ongoing contamination, try pulling the seal ring when the die ring and pin are pulled. Because it’s a restricted area, large chunks of contamination or previous color can hang up there. After pulling then cleaning the tooling and seal ring, run the extruder slowly to push out any large contaminates before putting the tooling back in the head and using your compound.

• **Accumulator-head care:** Did you correctly check everything outlined here? Did you purge and remove the previous color, additives or contamination from the system? Are you still getting streaks or specks in your parison? Helpful hint: It may be time to inspect the internals of your screw/barrel and accumulator head for any wear or grooves that can trap contamination. [PT](#)

**ABOUT THE AUTHOR:** Peter Miller has been in blow molding for 28 years. He started as an operator, then moved up to mechanical operations leader and then plant manager at a facility with 19 accumulator-head machines. He started Delta Blow Mold Consulting and Repair, N. Towanda, N.Y., in May 2019, in response to the shortage of dedicated mechanical ability in manufacturing. Contact: 716-512-4458; [blowmoldpro@gmail.com](mailto:blowmoldpro@gmail.com).