



Extrusion 2018

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Dynamic Purging for the Extrusion Process

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QUICKSHOTS

Drop. Purge. Save.

Purging couldn't get any Easier



Why Use a Commercial Purging Compound in Extrusion

Color and material changes are faster using a Purging Compound such as iD QuickShots® than with the traditional method of running hundreds or thousands of pounds of virgin material through the extruder to purge the previous material.

Most Commercial Purging Compounds are designed to remove stubborn carbon and color deposits while ordinary processing resins fall short of the components necessary to clean a barrel and screw.

The use of iD QuickShots® can prevent the need for screw-pulls. And when they are required, can significantly reduce the time and effort required for a screw-pull procedure.





Purging Compound for the Extrusion Process

Just like the Tools in a Tool Box- each has a function:

Purging Compounds are typically broken down into the following categories:

- **Mechanical Purge:** Cleans by scouring with a particulate such as glass or mineral;
- **Chemical Purge:** Cleans using chemical reaction;
- **Hybrid Purge:** Cleans using the components of both Mechanical and Chemical





Choosing the Correct Purging Compound for the Extrusion Process

Evaluation of a purging compound for the Extrusion Process should start with the Equipment and any limitations such as:

- Melt/Gear Pumps
- Breaker Plates
- Screen Changers

Mechanical Purging Compounds may contain particles that will lodge or block these areas of the process.

While a mechanical-type Purging Compound is often a great choice to clean the screw and barrel, a chemical-type purge, or even one that foams or expands, may prove useful in cleaning the dead areas that are common in dies, breaker plates and even screen changers.





Purging Dynamics for the Extrusion Process

To maximize the dynamics of the purging process:

- Ensure that the barrel is fully charged
- Increase the screw speed to the maximum safe rpm once the purge starts to come out of the machine
- During the purge process, periodically stop the screw and allow the purge to settle into any “dead” areas
- Start rotating the screw slowly- increase screw speed- then decrease the speed again throughout the process.

By changing the screw speed and velocity of the material flow- provides a highly fluctuating environment of pressure and agitation that allows a purging compound to work its best. This is done until the purge is visibly free from any contamination.





Preventative Maintenance Program for the Extrusion Process

A periodic purging routine or Preventative Maintenance Program should be established to avoid contamination build-up, which could lead to more difficult purging situations requiring greater time and effort.

A “shutdown and barrel sealing” is highly recommended particularly with a non-glass-filled grade of purging compound such as iD QuickShots during a temporary or extended shutdown. Sealing the barrel ensures that no further degradation occurs and provides further cleaning.

A Purging Preventative Maintenance Program (PPMP) typically reduces screw-pulls by an average of 50% or greater





Preventative Maintenance Program for the Extrusion Process

A Purging Preventative Maintenance Program (PPMP) typically:

- ✓ Reduces *Screw-Pulls* by an average of 50% or greater;
- ✓ Decreases *Production Down-Time* by an average of 65%;
- ✓ Reduces Natural/Virgin Resin consumption for purging by an average of 45%;
- ✓ Increases Production Efficiencies on average of 35%.

Statistics are based on averages collected in case studies on both extrusion and injection molding application.





Case Study at Coperion® Process Technology Lab

A team of process engineers at the Coperion® Process Technology Lab in Sewell, New Jersey conducted trials with the iD QuickShots and iD SP/PP purging compounds. The testing was done on their twin-screw lab and production sized extrusion lines.

The average time to purge their extrusion equipment was 4-5 hours and sometimes still required a screw-pull. The profiles for these trials remained the same as their operating conditions. The materials used were a Carbon Black Concentrate at 6% and TPO resin.



Trials resulted favorably for both the iD QuickShot and the iD SP/PP Pellet- Purge time was reduced to less than one hour, and material consumption was decreased by over 65%.





What are iD QuickShots®?

iD QuickShots® are single dose purge compounds designed to simplify the purge process- while reducing the overall costs associated with purging plastic processing equipment.

iD QuickShots® consist of:

- Poly Bag that melts at a very low temperature and becomes homogeneous with the purge resin;
- A High-Performance Liquid Purging Solution- Pre-measured into 1 oz. and 3 oz. for proper dosage.

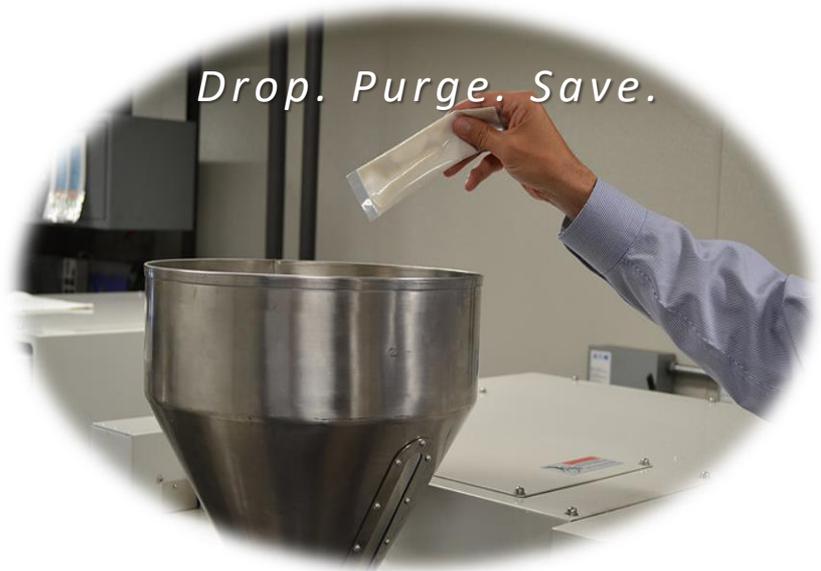


iD Additives™

QUICKSHOTS

Benefits:

- Simple and Easy to Use
- FDA Compliant and Environmentally Safe
- Works with Any Resin
- Resolve Inventory Issues
- Minimize Down Time
- Made in the USA





How are iD QuickShots® used and how do you know how much to use?

- iD QuickShots™ are extremely easy to use- just place the entire bag into the feed throat and follow up with the desired resin;
- Charge the barrel and allow a few minutes before beginning the purge cycle. For best results change the screw velocity/speed during the purge cycle- this ensures that the purge/resin solution is getting into all areas of the screw and barrel. Changing back pressure and screw speed alters the dynamic shear and produces an improved purging results;
- Dosing is very easy: One (1)- 1 oz. iD QuickShots™ for every One Inch (1") of screw diameter- Example: 1" Screw diameter would require 1oz. or 1- 1 oz. iD QuickShots™ 2" Screw diameter would require 2 oz. or 2- 1 oz. iD QuickShots™ 3" Screw diameter would require 3 oz. or 3- 1 oz. or 1- 3 oz. iD QuickShots™

Purge Cycles that require more than multiple iD QuickShots™ should be spaced evenly and follow with the desired resin until the entire barrel is charged.



Are iD QuickShots™ safe and effective for use in all areas of processing equipment?

- iD QuickShots™ contain no abrasives or particles that will damage the integrity of a mold, die, screw/barrel or any surfaces in the process.
- It is recommended to use the iD QuickShots™ to clean Manifolds, Hot-Runner Systems, Mixing Nozzles, Check Rings, Melt Pumps and any other components that are hard to reach or difficult to clean.



How do iD QuickShots® compare in cost to the average ready-to use pellet purging compounds?

How do iD QuickShots™ compare in cost to the average ready-to use pellet purging compounds? Using the following cost comparison reveals the typical cost savings realized with iD QuickShots™:

One Inch (1") Screw diameter Screw/Barrel-

| | |
|--|---------------|
| One- 1 oz. iD QuickShots® | \$1.85 |
| 10 lbs. of Polypropylene Natural 12 melt @ \$.70/lb. | <u>\$7.00</u> |
| | \$8.85 |

One Inch (1") Screw diameter Screw/Barrel-

| | |
|---|----------------|
| 10 lbs. of Ready-To-Use Purge Compound @ \$2.00/lb. | \$20.00 |
| (Rinse Resin) 3 lbs. of Polypropylene Natural 12 melt @ \$.70/lb. | <u>\$ 2.10</u> |
| | \$22.10 |

In this scenario- the iD QuickShots™ represent a 60% Savings in Resin Costs alone.



Can iD QuickShots™ be ran into parts or profiles?

Yes, outside of the initial reaction in the screw and barrel, the polymer that exits the process equipment is contaminated (carbon, color or degraded resin deposits) but can be molded or ground up to be used in a utility applications such as Black-where contamination is not an issue.



What is the most common objection by potential customers with the iD QuickShots?



Most potential customers assume that they must tear the Poly Bag open and Pour the contents into the feed throat- they are amusingly satisfied when they learn that there is no need to open the bag- deposit the entire bag into the feed throat and follow up with desired resin. Simple and Easy.



QUICKSHOTS

What are the top 3-5 advantages of your QuickShot purge compared to the other iD purge products you offer?

- **Ease of Use;**
- **Reduced Cost to Purge;**
- **Reduced Inventory Space;**
- **Scrap can be reused if desired;**
- **Unmatched Technical Support.**





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Thank You