

Dyna-Purge® A

Performance test results comparing three commercial purging compounds:

- Dyna-Purge® A – Hybrid Purging Compound
- Chemical/Mechanical Purging Compound
- Mechanical Abrasive Purging Compound

Conducted by:

The Polymers Center of Excellence, Charlotte, North Carolina

Commissioned by:

Shuman Plastics, Inc., Dyna-Purge® Division, Depew, New York

Comparative Testing with Dyna-Purge® A

Processing information for Dyna-Purge® A:

Applications	Injection molding, extrusion, compounding and blow molding
Temperature range	320°F – 500°F (160°C – 260°C)
Types of resins	PP, TPO, TPE, TPR, TPV (Low temperature range specific formula)
Minimum clearance	None
Amount needed	Approximately 1 to 2 times barrel capacity

Abstract:

The Polymers Center of Excellence in Charlotte, NC conducted an extensive independent study in December 2018. The study was commissioned by the Dyna-Purge division of Shuman Plastics, Inc. to compare the most commonly used commercial purging compounds in the industry. All trials were conducted on a 55 ton Arburg injection molding machine using polypropylene (PP).

Types of Commercial Purging Products Used:

Dyna-Purge® A: The first “hybrid” purging compound to combine the key features found in both mechanical and chemical products. This new technology is ideal for eliminating color streaks and other forms of contamination often associated with purging polypropylene from the screw and barrel as well as the tool and die without the need for process adjustments.

Chemical/Mechanical (alternative): A polyolefin based compound with chemical additives. The chemical ingredients work by breaking down the polymer chains of the resident resin. Note: Required accommodations including raising the temperature and in some cases, adding a soaking phase to the process.

Mechanical Abrasive (alternative): A mineral filled polyolefin based resin. The compound functions as a mechanical agent with the base resin melting and the filler abrasively cleaning the surface of the screw and barrel. Note: Abrasive purging compounds may cause wear to process equipment.

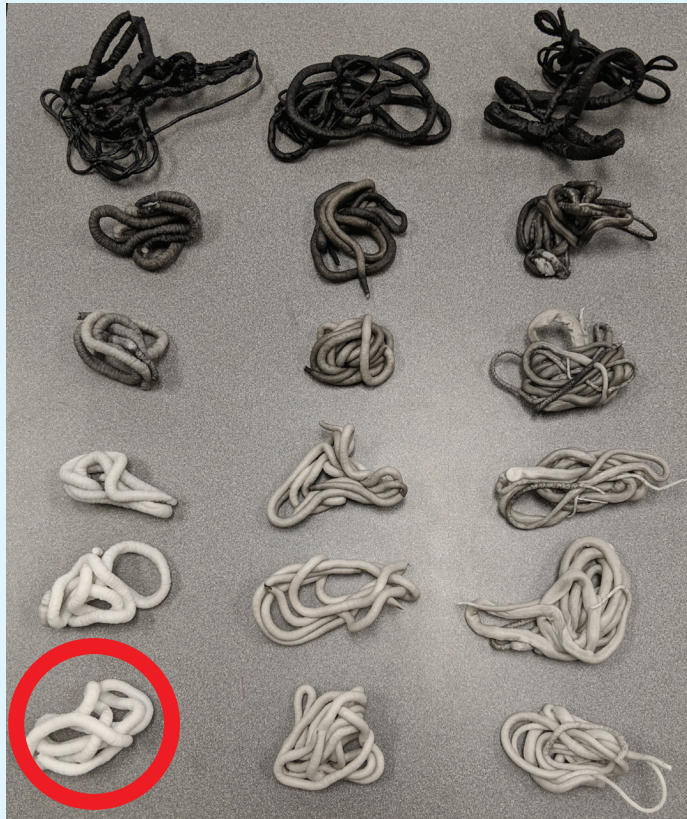
Processing Resins: Polypropylene (PP) – Processing temperature 450°F (232°C)

Trial Protocol:

1. Set temperature to appropriate level for resin and clean hopper
2. Introduce 100g of black resin, starve the screw
3. Clean hopper
4. Add 300g purge material
5. Screw forward
6. Set shot size to 50% and purge until compound is consumed; place purge piles in water to solidify
7. Clean hopper
8. Introduce 100g of natural resin, starve the screw

Evaluation Criteria:

In an effort to control variables and validate results, each of the 3 commercial purging compounds followed the same trial protocol. Upon completion of each trial, the inspectors reviewed the “post purge resin” assigning a “Pass” or “Fail” rating based on the presence of contamination and assessing the degree of visual purity or purge success.

No.1**No.2****No.3****Trial: Polypropylene (PP)****RESULTS:****Only Dyna-Purge® A received the "Pass" rating.****No.1****No. 2****No. 3**

No.	Purge	Rating	Comments
1	Dyna-Purge A	Pass	After 300g of purge, both the purge compound and the post purge resins were clean and free of contamination.
2	Chemical/Mechanical	Fail	After 300g of purge, traces of black PP still present
3	Mechanical Abrasive	Fail	After 300g of purge, traces of black PP still present

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