

How Effective are Purge Compounds

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How effective are purge compounds Vol. 19 #3, November 1992

The tenacity with which polymer melts and solids adhere to the metal surfaces of an extruder/adaptor/die system varies considerably from resin to resin and further from additive system within a particular resin to additive system. To further complicate the problem, some polymers have a rapid rate of degradation while others are quite tolerant of longer resident times under heated conditions.

Needless to say, the problems of either cleaning old resin out of an extrusion system before shut down, resin change, or even color change varies widely from application to application. Is there a purge compound on the market that is universal in its application? No!

According to a 1987 article (1) purging compounds fall into four categories. These include flushing, scouring, penetrating, and chemical.

Flushing — involves running a low cost, somewhat "stiffer" material through the system. The philosophy of flushing is just the replacement of material in the system.

Scouring — an increased action above flushing where some solid flow properties are desirable to remove melt from wetted surfaces.

Penetrating — a diffusive lubricating mechanism where a lubricant is forced to separate a resin from the metallic surfaces.

Chemical - an attempt to change the chemical nature of the resin to be purged by depolymerization.

Needless to say, economics enter the purge picture. Is it cheaper to run the equipment with the next resin to flush the system or purchase some purge compound, which may cost \$4 to \$20 per pound, for purging? Can the extruder be disassembled and cleaned more economically than purged? Can the purge compound or its products of reaction be easily purged from the extruder? Must the die and adaptor be removed prior to purging?

You may want to read the two articles (1,2) referenced to obtain an insight into the problems and potential solutions to the problem of purge cleaning an extrusion system. Don't forget that the adaptor and die often represent a large wetted surface that may require purging.

Finally, remember that some screw designs such as the Mallefer long barrier may present purge problems for some compounds such as cast acrylic.

(1) Galli, Ed, "Purging Compounds" Plastic Compounding, July/August 1987 pages 15 to 20.

(2) Borckschmidt, Ann, "Purging: Cutting the Cost of a Necessary Evil" Plastics Technology, March 1982 pages 73 to 76.

— Robert B. Gregory

See also:

- Cross contamination
- Melt block problems
- Purging of extruders
- Purging of extruders (1993)
- Screw cleaning
- Screw maintenance

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