

Utilization Of Regrind Material In PVC Extrusion Processing

Introduction

During the extrusion process, it is unavoidable that a certain percentage of material will not be directly converted to the end product. Scrap material generated during start-up, shut-down, ordering processing can often be reclaimed much to the economic advantage of the extruder.

Polyvinylchloride compounds (PVC), when properly handled, readily lend themselves to reconversion through regrinding. Laboratory tests conducted by The Geon[®] Company, one of the world's largest suppliers of specialty PVC compounds, have concluded that reground PVC (even at 100-percent levels) can maintain the original engineered properties inherent in the unprocessed or virgin compound material.

PVC REGRIND BLENDING - PRACTICAL, ECONOMICAL

Utilization of 100-percent regrind represents an optimum processing situation. While many extruders run 100-percent regrind, many others opt for blending regrind with virgin compound. The choice of processing regrind singularly, or in combination with virgin material, depends on both the profile requirements and processing parameters of the material.

Geon[®], as a matter of general policy, (that is, in the absence of more definitive application-specific information), recommends regrind utilization in a range of 5 to 35 percent. Based on laboratory tests and field information, the following guidelines are offered to help the extruder establish successful operating practices when using PVC regrind.

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SUCCESSFULLY REGRINDING PVC

The key to the successful use of regrind material is cleanliness. Material subjected to thermal degradation through overheating during processing should be removed from extruder, dies, etc., and scrapped. Once even partially degraded, such material should never be reground for subsequent processing.

High heat history can also be generated in the material by friction during the regrind process (especially if grinder blades are dull) as well as during storage if the regrind material is placed in storage bins while it is hot. Since rigid PVC acts as an insulating material, the top (or outer layer) will confine heat in the regrind to the interior area of the container. Such trapped heat is not dormant and will, over time, act to degrade the material near the core of the container.

MINIMIZING THE POSSIBILITY OF THERMAL DEGRADATION

Operating personnel should be made aware of the possibilities of regrind contamination and of the following procedures to help eliminate the problem:

- 1) Grinder blades should be sharpened frequently at regularly scheduled intervals.
- 2) Regrind particle size should be kept uniform and should not be ground to fine particle size (an excessive amount of fines can affect final product surface appearance).
- 3) A cooling device should be used to lower the temperature of the regrind

prior to packaging it in containers for storage. A fan, for example, blowing over hot regrind on a flat metal tray will cool the material sufficiently for storage (90 to 100°F).

- 4) Regrind must be kept free of foreign objects. Such contamination can affect the final profile and, although less likely, could damage the equipment.
- 5) Compound colors should never be mixed.
- 6) One batch of regrind should not be mixed with regrind from different runs as heat histories will not be identical.

EXTRUDER CONTROL SETTINGS

All regrind containers should be labeled with the heat history of the regrind material they contain. This aids the operator in setting machine controls as processing 100-percent regrind calls for adjustment of extrusion parameters. As a general rule, extrusion temperatures should be slightly higher (10 to 15°F) than temperature settings for processing virgin compound. Extrusion rates should be decreased slightly.

For more information on PVC compounds or additional technical data on regrinding PVC, contact your Geon[®] representative. Or write or call Geon[®], Geon Vinyl Division, 6100 Oak Tree Boulevard, Cleveland, OH 44131. Phone 1-800-GET-GEON
1-800-438-4366



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