



Hi Pro II Screw for Geon™ Compounds

Profile extruders achieve up to 40 percent higher output rates and enhance surface quality by using the Hi Pro II Screw and Geon™ rigid vinyl compounds from PolyOne Corporation.

Situation



In the competitive market for profile extruders, it is critical to be able to achieve both high output and high quality extruded parts. Overall system costs are largely dependent upon throughput and the speed at which parts can be manufactured. At the same time, because extruded profiles are unpainted, surface quality is extremely important. Extruders strive to achieve a smooth surface, the appropriate level of gloss, and complete color dispersion. When running vinyl compounds at high speeds on regular screw equipment, extruders can often experience problems such as poor surface quality (such as “orange peel”) and less than optimal physical properties. At lower output rates, the surface quality may improve, but overall system costs increase.




Geon™ rigid vinyl compounds have a long and successful history of use in profile extrusion. Based on this experience, PolyOne recognized the challenges its customers were facing and invested in finding a solution. After an in-depth study of low-shear compounds, PolyOne developed and patented a single screw design that could optimize processing and improve quality.

The High Pro II Screw contains special zones that are customized to move the vinyl compound down the screw faster and with optimal mixing.

The PolyOne Difference

As the manufacturer of Geon rigid vinyl compounds, which are widely used for profile extrusion, PolyOne invested in research to find a solution to customer issues. The company engaged a scientist who formulated vinyl compounds – specifically, low-shear materials – to develop a patented single screw design which optimized both processing and quality.



The Hi Pro II Screw, which is leased to Geon customers by PolyOne’s Geon Performance Polymers unit, contains special zones that are customized to move the Geon compound down the screw faster and with optimal mixing.

The screw is most effective in medium- to long-run applications and low-melt-temperature jobs requiring significant downstream cooling. The screw can process prime material, blended product and it is capable of running 100 percent regrind. Hi Pro II Screws are adaptable to most 2 ½ inch and 3 ½ inch single screw extruders.

Delivering a Value-Added Solution

By changing from standard screws to the Hi Pro II Screw, profile extruders have gained important benefits.

- **Faster processing at lower temperatures = lower per-unit costs:** The Hi Pro II Screw enables extruders to increase processing speed by 10 - 40 percent at lower melt temperatures to conserve energy, resulting in lower costs per unit.
- **Improved surface finish = higher quality:** The excellent surface appearance of profiles extruded using the Hi Pro II Screw and low-shear Geon vinyl compounds mean consistently high-quality results that reduce scrap and further lower system costs.
- **Processing differentiation = competitive advantage:** Through its patented design, the Hi Pro II Screw can help extruders stand out in the highly competitive profiles market in two ways – lower costs and improved quality. They can use these advantages to achieve higher profit margins or beat competitors on price.
- **Leasing = lower capital costs:** The ability to lease rather than purchase the screw enables extruders to avoid capital expenditures.

Here is how the lease program works:

- Hi Pro II Screws are only available via lease from PolyOne Corporation
- Screws may be leased to any lines running 100 percent Geon compounds
- No-risk screws are available for evaluation prior to any lease commitment, subject to a standard secrecy agreement
- Geon technical service will help extruders optimize performance
- Screws are maintained by Geon Performance Polymers. Maintenance includes an annual survey and any service required to optimize performance (a loaner screw will be provided while the customer's screw is refurbished)

More than 30 customers have benefited from the Hi Pro II Screw, with 50 screws currently in service. Here's what some of these customers report:

"The screw performed just as promised, delivering a 30 percent increase in rate."

"Running lower temperatures at the same rate improved the surface and impact of our profile."

"We have been running over two years with no sign of wear on the screw."

Product choices often vary by region due to differences in regulatory and agency requirements, availability and other key factors. Please contact your nearest sales office for assistance in choosing the right solution for your locale.

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