Hyperform® HPN-20E, a new additive chemistry from Milliken, enables new innovations in polyethylene flexible packaging. Films produced with PE resin containing Hyperform HPN-20E offer greater clarity and improved physical properties while improving productivity in both production and processing.

PE film nucleated with Hyperform HPN-20E offers many opportunities for commercial success:

- **Downgauging opportunities** through improved stiffness, tear, and impact performance compared to LDPE/LLDPE blends.
- **Enhanced shelf appeal** through 40% haze reduction and a two-fold increase in gloss compared to pure LLDPE.
- **Improved productivity** through faster crystallization half-times leading to increased line speed.
- **Longer shelf life** due to 40% reduction in LLDPE Moisture Vapor Transmission Rate (MVTR) and 20% reduction in HDPE MVTR.
- **Quality improvements** through hyper-nucleation of the resin resulting in less streaking and inconsistency.

**General Information:**

- Compatible with other polyolefin additives
- Specifically developed for use in extrusion applications
- Process under normal operating conditions
- Effective in many PE resin types, regardless of comonomer or catalyst

The parts shown at the top of the page represent potential applications for Hyperform HPN-20E and are not actual representations of parts containing Hyperform HPN-20E.
Hyperform® HPN-20E Mechanism of Action

HPN-20E increases the percent crystallinity and the number of crystal nuclei. This affects both the bulk polymer (peak crystallization temperature) and the surface roughness (from spherulite size).

Optical Enhancement

Significant shelf appeal improvements are made using Hyperform HPN-20E. Dramatic improvement in haze and gloss are seen in LLDPE films.

Physical Property Improvements

LLDPE nucleated with HPN-20E maintains more tear and impact performance than LLDPE/LDPE blends. These blends typically lose up to 80% of tear performance and 40% of impact performance.

Improved stiffness is the result of increased crystallinity from HPN-20E along with the unique orientation effects of the additive.