

Milliken® Hyperform® HPN™-68L

Performance Additive
for Polypropylene

Hyperform® HPN™-68L provides the possibility of faster productivity via reduced cycle times, along with the proven energy savings.

Hyperform HPN-68L Attributes

- Extremely fast polymer crystallization speed
- Isotropic shrinkage for reduced warpage and high productivity
- Overriding nucleation power

Typical applications

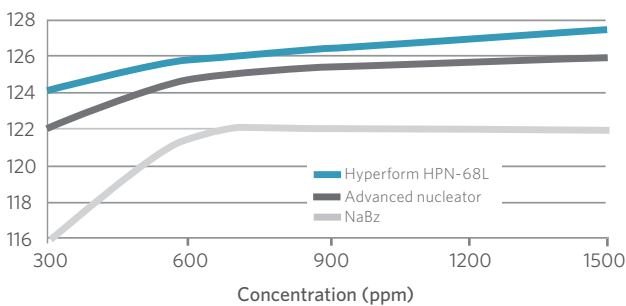
Automotive, appliances, material handling, TWIM, closures, thermoforming

Productivity and Quality Improvements

Thermal Performance

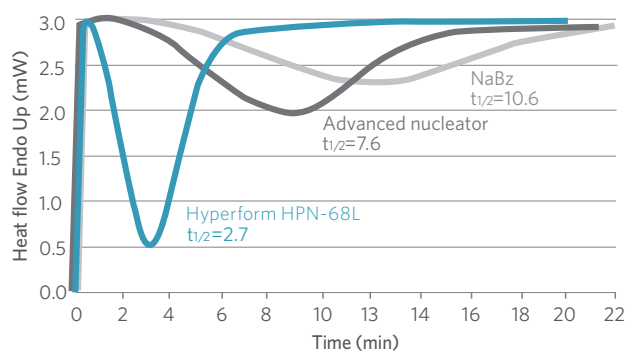
Peak Crystallization Temperature (T_c)

Higher peak crystallization temperatures allow quality parts to be produced with decreased cooling times.



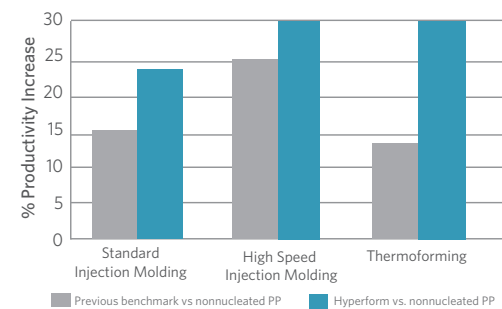
Isothermal Crystallization Half-Time

Shorter halftimes allow quality parts to be produced with decreased cooling times.



Typical Productivity Results

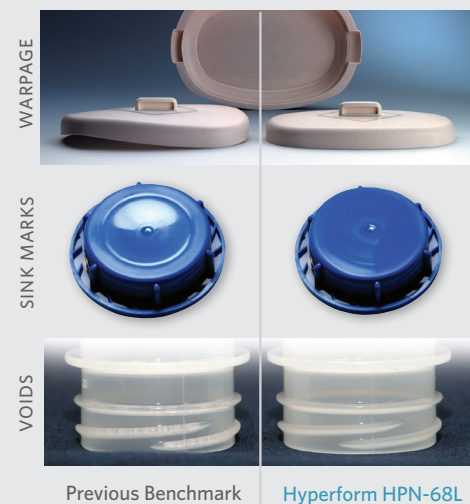
The addition of Hyperform HPN-68L to a polypropylene resin allows a processor to make the highest quality parts at the fastest possible production rates.



Typical Quality Improvements

Hyperform HPN-68L has dramatically improved part quality in numerous field trials. This includes the elimination of:

- Warpage | Sink marks | Ejection pin marks
- Voids | Deformations during mold release



Hyperform® HPN™ -68L

Performance Additive for Polypropylene

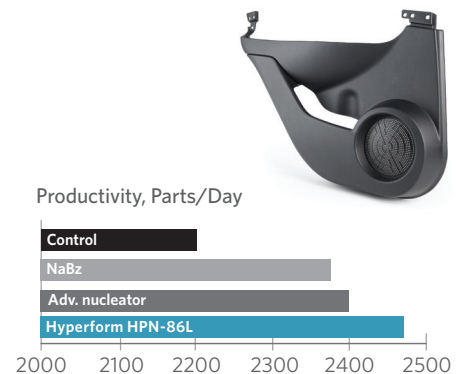
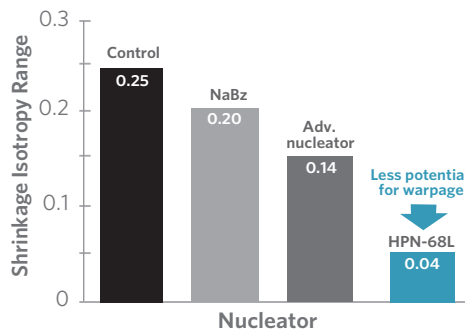


Isotropic Shrinkage and Quality Improvements

Resins containing HPN-68L provide improved isotropy and can help improve part quality, warpage and cycle time.

Case Study - Door Panels

- Process: Injection molding
- Resin: 20 MFR Impact Copolymer PP
- Formulations: Control Conventional Nucleator (1000 ppm) Advanced Nucleator (600 ppm) Hyperform HPN-68L (600 ppm)

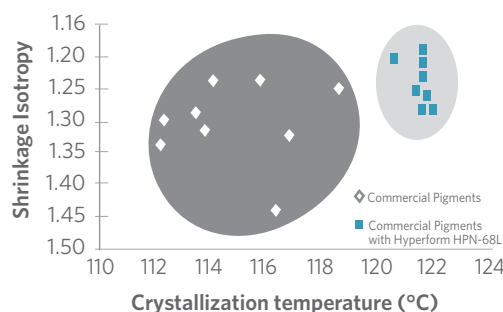


Overriding Nucleation Effect in Pigmented Systems

Hyperform HPN-68L can be added to pigment formulations and will override color-to-color variation in crystallization temperature and shrinkage, reducing the need to make color-specific machine adjustments and to maximize production.

Case Study - Caps and Closures

- Process: Injection Molding
- Resin: 20 MFR Homopolymer
- Formulations: Various commercial pigments and Hyperform HPN-68L

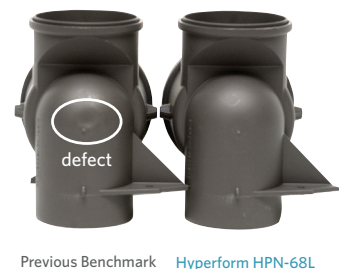
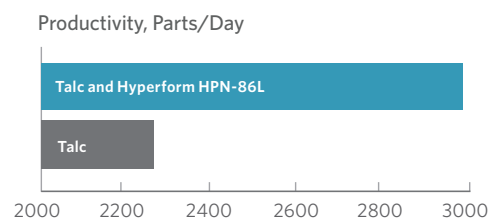


Nucleation Effect in Filled Systems

Hyperform HPN-68L is compatible with filled PP systems including talc, calcium carbonate, and glass filled polypropylene.

Case Study - Appliance Parts

- Process: Injection molding
- Resin: 20% Talc filled HP
- Formulations: Base resin, Base resin and Hyperform HPN-68L (500 ppm)



Please contact your Milliken representative for any additional information.

PLEASE NOTE: As each customer's use of our product may be different, information we provide, including without limitation, recommendations, test results, samples, care/labeling/processing instructions or marketing advice, is provided in good faith but without warranty and without accepting any responsibility/liability. Each customer must test and be responsible for its own specific use, further processing, labeling, marketing, etc. All sales are exclusively subject to our standard terms of sale posted at www.milliken.com/terms (all additional/different terms are rejected) unless explicitly agreed otherwise in a signed writing.

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