



Machine Direction Oriented Films

Enabling plastics circularity with recyclable monomaterial packaging

Machine direction orientation (MDO) of PE films offers an essential tool for meeting ambitious packaging sustainability targets set by brand owners and demanded by consumers. To achieve full recyclability, packaging designers must replace traditional mixed material packaging with monomaterial structures while ensuring food safety and maintaining the shelf life of products. All-PE MDO films were developed to replace BOPP and BOPET to produce fully recyclable packaging for a variety of applications.

MDO films produced via inline extrusion lines are ideal for use in food packaging (including pillow packs, metallized films), heavy duty shipping sacks, tapes and labels, and other demanding applications.

High-clarity MDO-HDPE to blown film laminate prototype.



Performance

High output rates and stable production due to ultra-clean, low gel resins designed for MDO applications



Stiffness

Exceptional stiffness to maintain registration for printing and converting for applications like stand-up pouches and flow wraps



Heat Resistance

Maximum heat resistance with minimal film shrinkage, ideal for packaging conversion, metallization and coating processes



Eye-Catching Aesthetics

Outstanding optical properties due to very low haze and very high gloss



Market Info Sheet

Flexible Packaging



NOVA Chemicals developed MDO films with balanced physical and mechanical properties based on SURPASS® HPs153-A. The films show exceptional stability due to broad orientation windows when produced on commercial scale inline MDO blown film equipment.

MDO Film Designs (25 µm)



All HDPE print web for laminates

- 1% secant modulus (MD): 2500 MPa
- Shrinkage at 100 °C (MD/TD): 2/1 %
 - Haze: 4 %
- Gloss at 45°: 80



Sealable HDPE for flow wrappers

- Seal initiation temperature: 95 °C
- Max hot tack force: 5 N at 105 °C
 - WVTR: 0.3 g/100in²-day
- 1% secant modulus (MD): 1700 MPa



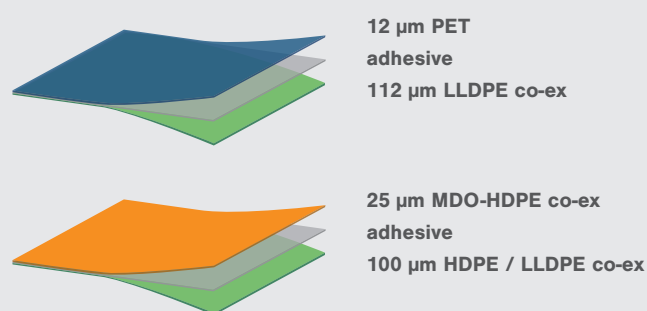
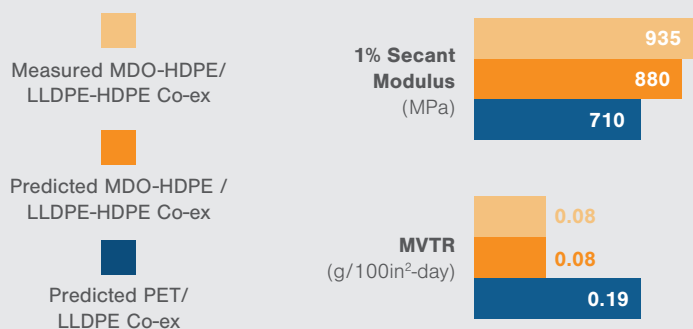
Tough films for sharp products

- Puncture: 90 J/mm
- Tear (MD/TD): 200/400 g/mil
 - Haze: 6 %
- Gloss at 45°: 80



CASE STUDY

Combining multi-layer film modeling using BONFIRE with the creation of physical prototypes demonstrates that a monomaterial laminate using an MDO-HDPE print web laminated to a moisture barrier all-PE co-ex film can replace a traditional, non-recyclable PET to PE laminate. Honey Garlic Stir-fry pouches displayed outstanding film performance including stiffness and moisture barrier as well as excellent heat resistance and optical properties.



US/Pittsburgh | +1.412.490.4170 | 800.222.7212 x4170 | novachemicals.com

The NOVA Chemicals logo is a registered trademark of NOVA Brands Ltd.; authorized use/utilisation autorisée. SURPASS® is a registered trademark of NOVA Chemicals Corporation in Canada and of NOVA Chemicals (International) S.A. elsewhere; authorized use/utilisation autorisée. The BONFIRE logo is a trademark of NOVA Chemicals Corporation. BONFIRE® is a registered trademark of NOVA Chemicals Corporation. The above information is provided in good faith. NOVA Chemicals is not responsible for any processing or compounding which may occur to produce finished articles, packaging materials, or their components. Further, NOVA CHEMICALS MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND, REGARDING THE INFORMATION GIVEN FOR THE PRODUCT DESCRIBED, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES, REPRESENTATIONS AND CONDITIONS, INCLUDING WITHOUT LIMITATION ALL WARRANTIES AND CONDITIONS OF QUALITY, MERCHANTABILITY AND SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Responsibility for use, storage, handling and disposal of the products described herein is that of the purchaser or end user.

J22KW