



# Enabling Innovative Packaging Solutions

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**DOW CHEMICAL IBERICA S. L**

**Hispack 2015** – Trendpack Area – Sustainable Packaging

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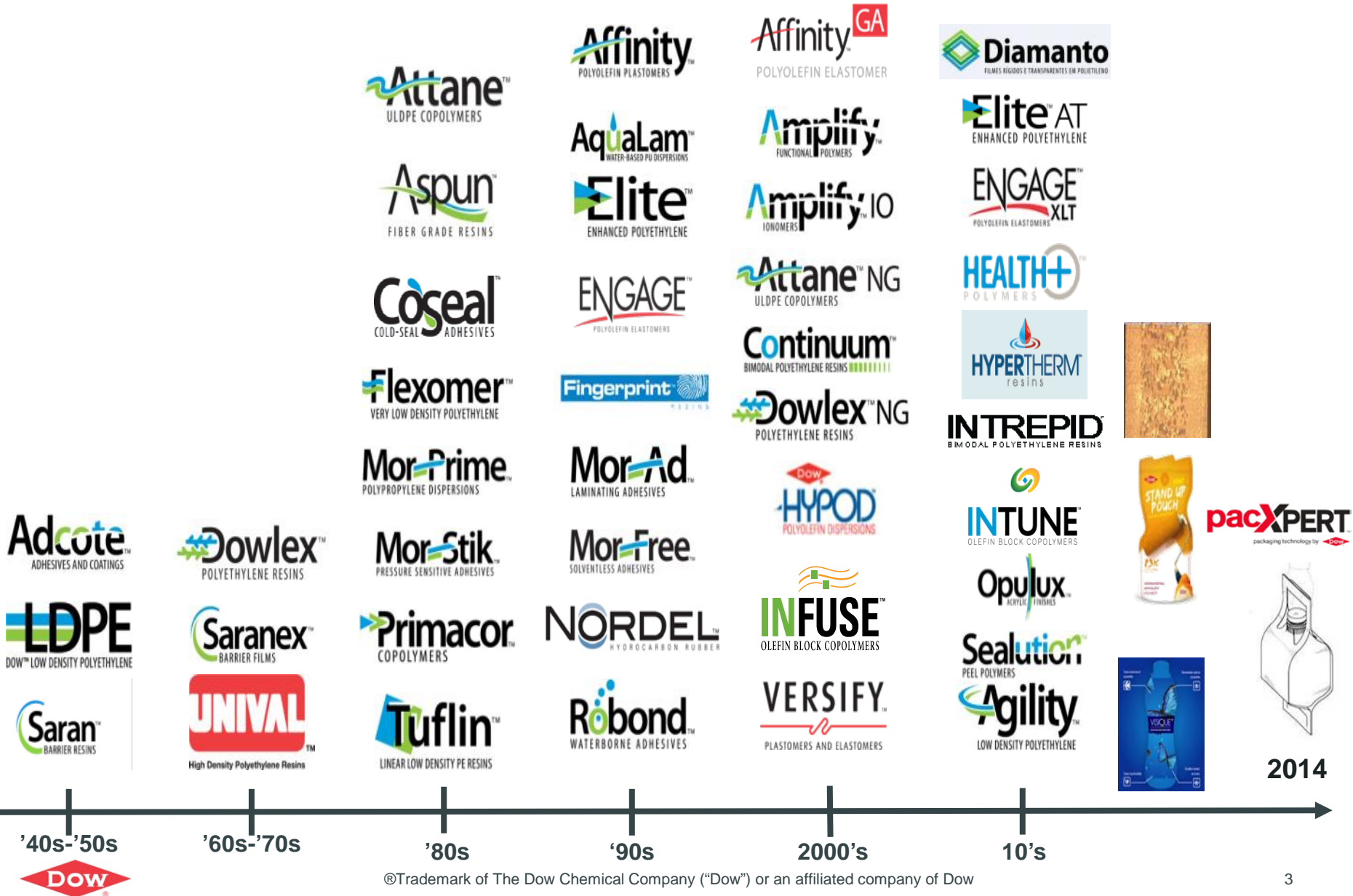
April 21<sup>st</sup>, 2015

## About Dow

- Delivers a broad range of technology-base **solutions** to customers in approximately **180** countries
- **Integrated value chain** aligned to high-growth sectors such as **packaging**, electronics, water, coating and agriculture.
- **58 billion** annual sales in 2014
- **53,000** approximate employees worldwide
- **6,000** products manufactured at **201** sites in **36** countries across the globe



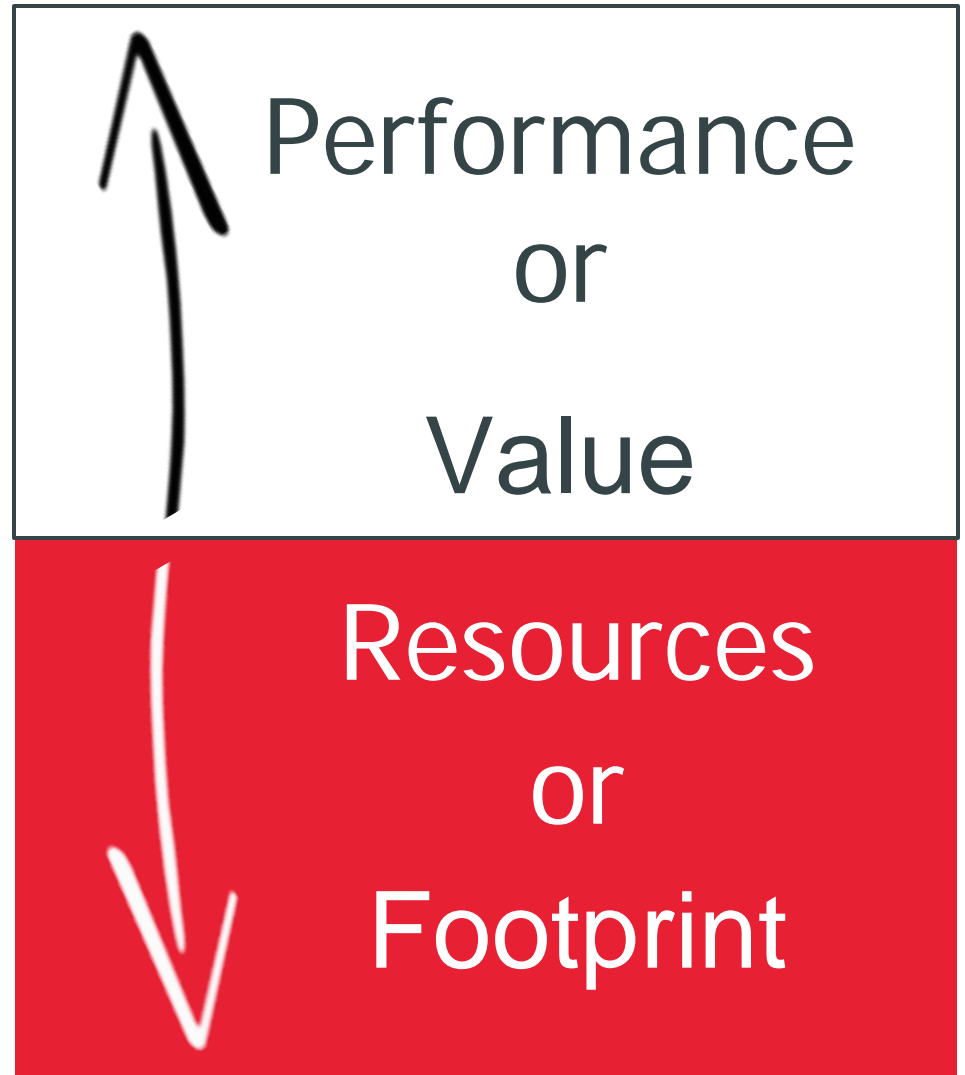
# A Proven Track Record of Innovation...



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# Enabling Innovative Packaging Solutions

**Sustainability Focus**



# Enabling Innovative Packaging Solutions

## Products Enablers

- Reducing Leakage: Packaging with Improved Hermeticity
- Recycling Barrier Film into New Packaging Structures

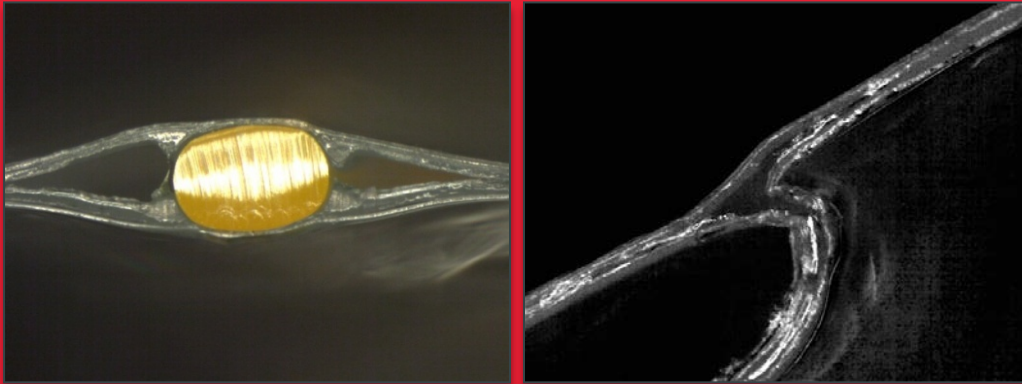
## Packaging Solutions

- Foam Films for Light Weight
- Design for Recyclable Flexible Packaging
- Moving from Rigid to Flexible



# Reducing Leakage: Packaging with Improved Hermeticity

## POOR HERMETICITY



## Remarkable polymer design

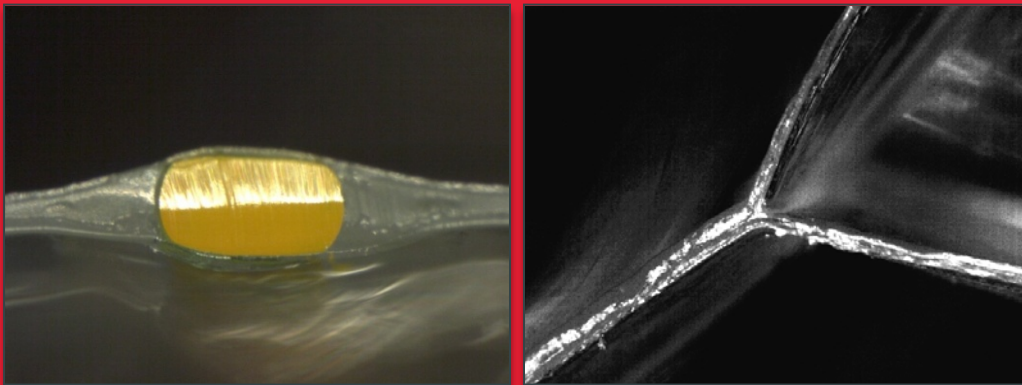
- Enhanced caulkability
- Improved hot tack



## Enables hermetic sealing

- Through gussets, wrinkles and contamination
- At higher speed, weight and stress

## ENHANCED CAUKABILITY AND HOT TACK



Source: Dow

## Enhanced Packaging Integrity



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## Packaging Solutions

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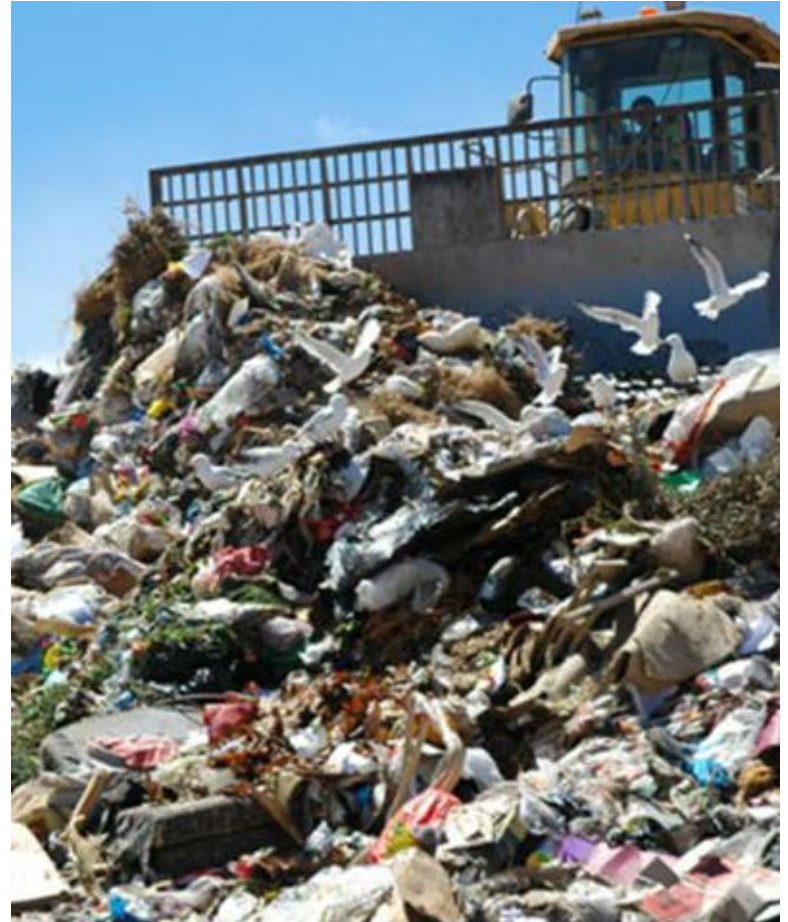


# Recycling Barrier Film into New Packaging Structures

Less waste

Generates zero  
landfill waste

**Retain**<sup>™</sup>  
polymer modifier by 

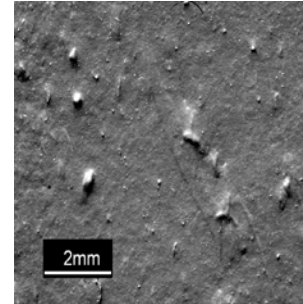
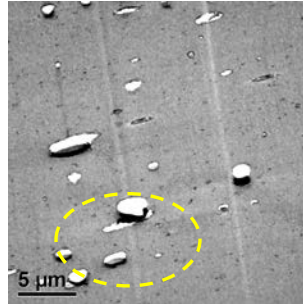




# Recycling Barrier Film into New Packaging Structures

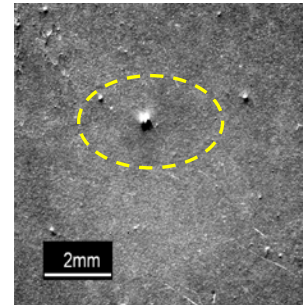
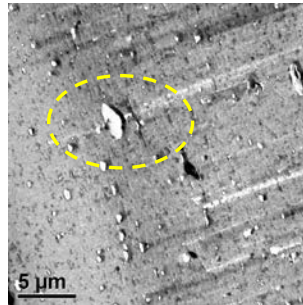
## Gel Reduction / Optical Improvements

No  
Modifier



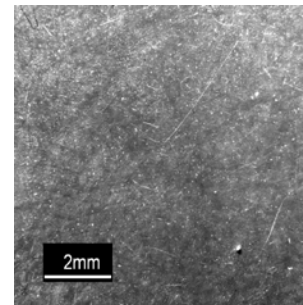
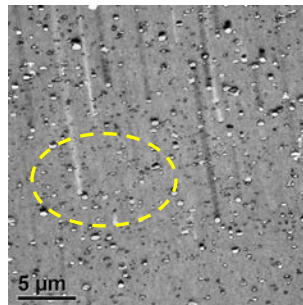
*Large EVOH domains  
Point defects*

Conventional  
Modifier



*Bimodal EVOH particles*

RETAIN™  
POLYMER  
MODIFIER

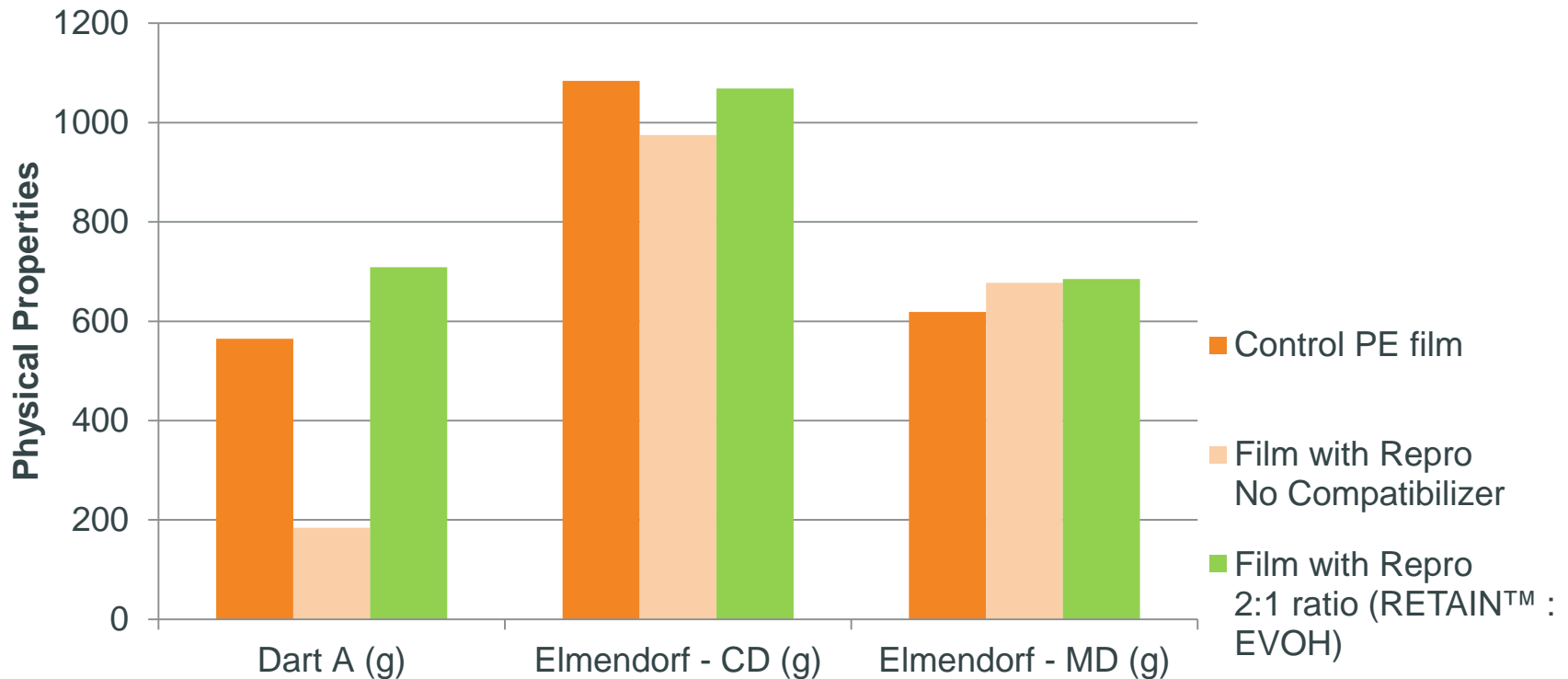


*Small,  
uniform  
EVOH particles*



# Recycling Barrier Film into New Packaging Structures

## Physical properties of barrier film recycle streams



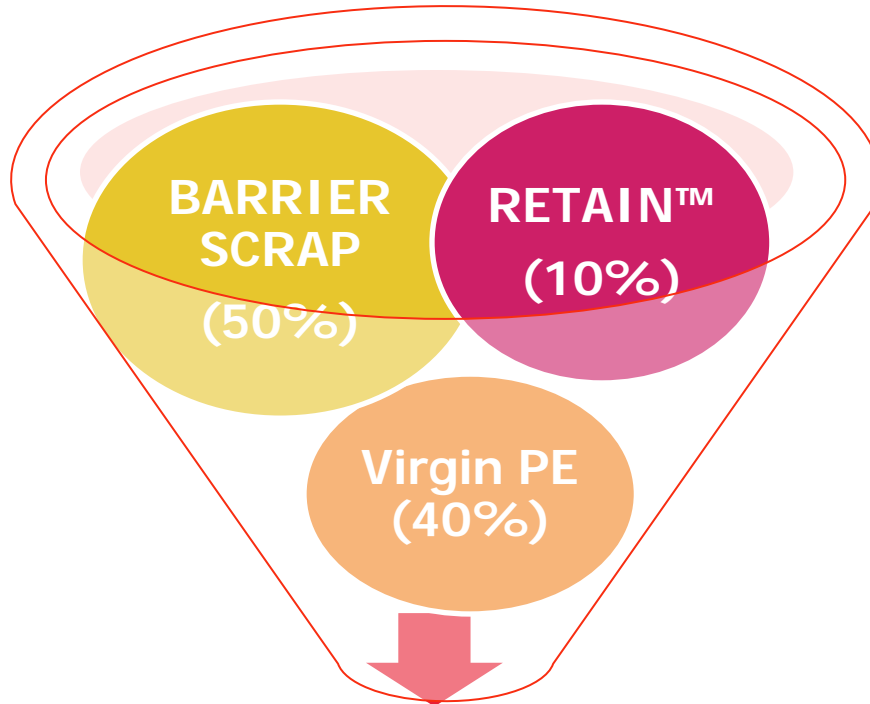
The properties shown are typical but not to be considered as specifications

Films 50µm; 15/75/15; A: 100% DOWLEX™2056; B: Recycle stream with 10% EVOH

Source: Dow



# Recycling Barrier Film into New Packaging Structures



**Retain™**  
polymer modifier by **DOW**

≈ **15-20+% SAVINGS**  
vs. buying virgin PE

\*Business case assumption: 100 MT/month barrier scrap recycled into film production.  
Assuming barrier scrap being sold in market ~ 25% of PE prime.  
Using: 2:1 ratio of RETAIN™ to % Barrier Material (EVOH) in Scrap



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## Foam Films for Light Weight

Efficiencies



Fully Recyclable

Material Reduction

Environmentally friendly





# Foam Films for Light Weight

## Understanding Bending Stiffness Compensation

*Tunable stiffness by film design to meet packaging needs*

Structures can be designed to match or improve stiffness vs original film while consuming **less material resources**

**Conventional Film**



20%  
Thickness Reduction

**Down-gauged Film**



33%  
Thickness Increase

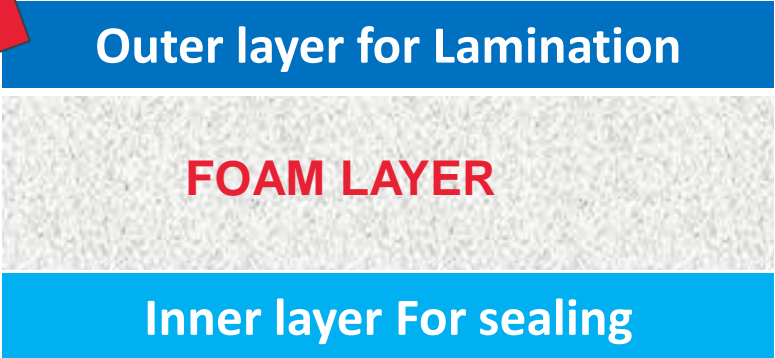
*Thickness reduced resulting in lower stiffness*

**Foamed Film**



*Thickness increased, stiffness restored with reduced resin consumption*

# Foam Films for Light Weight



Courtesy of MONDI and GALLINA BLANCA



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# Design for Recyclable Flexible Packaging

Less Waste to  
Landfill

Fully Recyclable



# ■ Design for Recyclable Flexible Packaging

## Key Solution Benefits:

- Recyclable Packaging Solution
- Opportunity for Costs Savings
- Proven Solution in Pouch Making Packaging Lines:
  - Design for Packaging Feel based on Bending Stiffness
  - Design for Sealing Temperature and Packaging Speed
  - Design for Printing and Packaging Aesthetics



# Design for Recyclable Flexible Packaging

## Dow, Printpack & Tyson de Mexico

Commercialized in 2013 a Recyclable 100% PE Stand Up Pouch for Frozen Chicken Packaging in a record time

- Printpack Inc., a major convertor of flexible and specialty rigid packaging
- Tyson Foods Inc., a leading global brand owner in the frozen chicken market



ENVASES ESTELAR AWARD  
*Mexico 2013*



WORLD Pack Award  
*Interpack 2014*

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## Moving from Rigid to Flexible

# pacXPERT™

packaging technology by 



Less waste

Lower costs

Life after use

Consumer  
Convenience

Differentiation



# Moving from Rigid to Flexible

Choice of  
**closures**

**Printable**  
on 4 sides



Dual or single  
**handles**

See through  
High **barrier**

[PacXpert.mp4](#)



Plasticon Gold Award  
Innovative Finished Product Process,  
India, 2015



L'Oscar de L'Emballage  
Flexible Packaging / Retort  
France, 2014



Emballage Pack Exhibition  
Innovation Award, Pack Experte Committee  
France, 2014

**Prestigious Awards:**  
Sustainable Package Technology Award  
China Package Tech& Innov Forum  
China, 2014

World Star Packaging Award  
World Packaging Organization's  
2013/2014

ABRE Gold Award  
Brazil, 2013



# Moving from Rigid to Flexible



**1.20<sub>m</sub>**  
impact resistance

**-50/75%**  
raw materials per pallet

**-10**  
times transport costs

Courtesy of OKLEINER AG



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— Thank you for your  
attention



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