Presentation for FlexPackCon
October 31, 2018
Our Guiding Principles

**ACT WITH INTEGRITY & IN COMPLIANCE**
We conduct everything we do with integrity and fully comply with all laws, regulations and company policies all the time.

**DRIVE VALUE CREATION**
Create long-term value for our customers, for the company and for society. Pursue safety and environmental excellence. Deliver superior results through effective, efficient decision making, execution and quality. Drive continuous improvement and innovation, while eliminating waste.

**BE DISCIPLINED ENTREPRENEURS**
Always think and act like owners of the company. Use good judgment, critical and economic thinking and initiative to achieve the full potential of our business. Embrace change, take action when you see opportunities to improve the company, and develop measures that lead to profitable action.

**ACT WITH HUMILITY**
Lead through humility and intellectual honesty. Seek and apply the best knowledge. Understand and deal with reality to drive the best outcome for the company and for your personal improvement. Challenge the status quo. Hold yourself and others accountable.

**FOCUS ON THE CUSTOMER**
We need to understand our customers and what they value better than our competition. We also need to develop knowledge of our customers’ business and relationships that enables us to anticipate and profitably serve their needs.

**TREAT OTHERS WITH DIGNITY & RESPECT**
Treat others with honesty, dignity and respect. Understand and appreciate the value of diversity and work together as a single team - the CCC team.
About Envision Plastics

Envision Plastics was established in 2001, since this time Envision has produced over 750 million pounds\(^1\) of recycled resin. In June 2014 Envision was acquired by Consolidated Container Company, a Bain Capital owned company and then in April 2017 was acquired by Loews Corp. Envision Plastics continues to operate as a distinct business within the CCC family.

Envision has achieved unrivaled product innovation that has led to the commercialization of the flagship products EcoPrime™, PRISMA™ and Deodorized Resin™.

Envision is committed to profitably deliver innovative post consumer resin solutions that meet and exceed the needs of retailers, consumers and packaging customers.

Differentiated Products

\(^1\)Management Estimate
The widest range of recycled products and applications available.

East Coast Plant
606-B Walters Street • Reidsville, NC 27320

West Coast Plant
14312 Central Avenue • Chino, CA 91710-5752
## Markets Served

Broad Market Participation
but 2/3 of PCR Produced Goes Back into Primary Packaging

<table>
<thead>
<tr>
<th>Food &amp; Beverage</th>
<th>Construction / Agricultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overwraps / Films / Bags</td>
<td>Pipes / Conduit</td>
</tr>
<tr>
<td>Bottles</td>
<td>Landscape edging</td>
</tr>
<tr>
<td>Netting</td>
<td>Overwraps / Films</td>
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<tr>
<td></td>
<td>Bottles / Pots / Pails</td>
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<table>
<thead>
<tr>
<th>Personal Care</th>
<th>Thermoforming</th>
<th>Toys</th>
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<tr>
<td>Tubes / Bottles</td>
<td>Food service</td>
<td>Playsets</td>
</tr>
<tr>
<td>Films / Overwraps</td>
<td>Sheet</td>
<td>Gardening sets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100% recycle content toys</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Household</th>
<th>Automotive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubes / Bottles</td>
<td>Seats, air ducts</td>
</tr>
<tr>
<td>Films / Overwrap</td>
<td></td>
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</table>
Environmental Impact

Resources Consumed to Produce 1 Pound of Recycled Resin

- The production of recycled plastic resin uses far fewer resources than producing new, virgin plastic resin.

- Production of recycled resin uses 90% less energy and emits 78% less greenhouse gases than producing virgin resin.

- Recycling plastic saves twice as much energy as burning it in an incinerator.

- Moreover, recycling plastics creates 6 times more jobs than landfilling recyclables and 36 times more jobs than incinerating them.

Franklin LCI Data
Association of Postconsumer Plastics Recyclers (APR) funded an LCI / LCA for plastics recycling

- Results indicated that recycling HDPE used 10% of the energy required to produce an equivalent amount of virgin resin (cutoff method – no burden of original virgin resin production energy)

- Results table above indicates energy savings for recycling HDPE based upon how many times you think the plastic will be recycled (open loop method – burdens recycled resin with a portion of the energy use to produce the virgin HDPE resin)
Successful film applications with PCR

> Gaylord Liners
> Shrink film
> Cereal Bags
> Pouches
> Bakery/Deli Sheets
Pouches with PCR from PACK EXPO

Charter NEX

Printpack

NOVA Chemicals
LLDPE film featuring 25% OceanBound Plastic by Bemis
Blowing Film with 100% Ecoprim
Hurdles to using PCR

• Getting the proper moisture and/or oxygen barrier protection
• Poor aesthetics, such as film color, unwanted inclusions (gels, …) and print quality
• Converters being open to running it on their equipment
• Higher cost of the PCR resin
Potential reasons for Gels, Holes, Bubble Break, color, ...

- Contamination
- Poor Mixing between PCR and Virgin
- Not appropriate temperature profile with PCR
- PCR degradation
- Dirty screw, die or screen pack
- Excessive regrind or reprocessed material
Learnings from PCR Experiments in Film

• Multi-layered film
  PCR performs better when used at 100% in a single layer versus blending resins together.

• Carrier resin type
  LDPE is not compatible with Envision PCR. LLDPE and HDPE will minimizing the blending issues and gel amounts during the flexible packaging processes.
Learnings from PCR Experiments in Film

• Additives, compatibilizers,…

Envision has come up with a “One Pellet Solution” approach, with a recipe of multiple additives to minimize gels, possible PET particles, and color enhancement.

• Potential operational adjustment

During flexible packaging processes, it is very important to adjust the operational parameters when PCR is used. Parameters such as; temperature, pressure, timing…
Learnings from PCR Experiments in Film

Continuous filtration is key!
Filtration Comparison

Ecoprime 30% + Virgin 70% Before and after new filtration system in Envision

Continuous filtration

Backflush filtration
Film made from 100% Ecoprim

Gel size was reduced from 470-590 micron to 30-50 micron
# Defect area reduction by using fine filtration

Defect area per 1 m² film in ppm [mm²/m²]

<table>
<thead>
<tr>
<th>size classification [µm]</th>
<th>2016002-4 (ppm)</th>
<th>2016002-6 (ppm)</th>
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<tbody>
<tr>
<td>70-120</td>
<td>0.96</td>
<td>1.52</td>
</tr>
<tr>
<td>120-160</td>
<td>1.20</td>
<td>1.79</td>
</tr>
<tr>
<td>160-200</td>
<td>1.17</td>
<td>1.87</td>
</tr>
<tr>
<td>200-400</td>
<td>5.03</td>
<td>7.06</td>
</tr>
<tr>
<td>400-600</td>
<td>2.84</td>
<td>4.68</td>
</tr>
<tr>
<td>600-800</td>
<td>1.10</td>
<td>3.19</td>
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<tr>
<td>800-1000</td>
<td>0.48</td>
<td>1.13</td>
</tr>
<tr>
<td>&gt;1000</td>
<td>0.57</td>
<td>0.37</td>
</tr>
<tr>
<td>[mm²/m²]</td>
<td>13.35</td>
<td>21.61</td>
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</table>
# Mechanical & Physical Properties of Typical Ecoprice

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<thead>
<tr>
<th>Property</th>
<th>ASTM Method</th>
<th>Units</th>
<th>Cereal Bag Spec</th>
<th>3 Layer 100% EcoPrime 60% Layer</th>
<th>5 Layer 100% EcoPrime 50% Layer</th>
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<tbody>
<tr>
<td>Gauge</td>
<td>E-252</td>
<td>Mils</td>
<td>2</td>
<td>2</td>
<td>2.25</td>
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<tr>
<td>Spencer Impact</td>
<td>D-3420</td>
<td>Grams</td>
<td>-</td>
<td>480</td>
<td>435</td>
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<tr>
<td>Puncture</td>
<td>D-2582</td>
<td>lb.</td>
<td>-</td>
<td>3.40</td>
<td>3.72</td>
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<tr>
<td>Tear Resistance</td>
<td>D-1922</td>
<td>Grams (MD)</td>
<td>7</td>
<td>25.6</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(TD)</td>
<td>686</td>
<td>1049.6</td>
<td>1108</td>
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<tr>
<td>Tensile Strength</td>
<td>D-882</td>
<td>PSI (MD)</td>
<td>6156</td>
<td>3890</td>
<td>3712</td>
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<tr>
<td></td>
<td></td>
<td>(TD)</td>
<td>4115</td>
<td>1630</td>
<td>1847</td>
</tr>
<tr>
<td>Secant Modulus</td>
<td>D-882</td>
<td>kPSI (MD)</td>
<td>178.24</td>
<td>83</td>
<td>77</td>
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<tr>
<td></td>
<td></td>
<td>(TD)</td>
<td>211.95</td>
<td>79</td>
<td>72</td>
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<tr>
<td>Haze</td>
<td>D-1003</td>
<td>%</td>
<td>20</td>
<td>48</td>
<td>58</td>
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<tr>
<td>Oxygen Transmission (OTR)</td>
<td>D-3985</td>
<td>CC/100in.sq./Day</td>
<td>-</td>
<td>164.0</td>
<td>152.0</td>
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<tr>
<td>Water Vapor Transmission (WVTR)</td>
<td>F1249</td>
<td>Gm/100in.sq./Day</td>
<td>&lt; 0.16</td>
<td>0.436</td>
<td>0.532</td>
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Wrap Up

• Not all PCR is created equal
• Don’t give up on PCR- there’s hope for success
• Envision will work with you every step of the process to help you be successful in incorporating PCR into your film

• QUESTIONS? (remember…I’m just a sales person)
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