Dow plastics for a circular world

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Plastic is part of a **circular economy.**
Global Commitments from Brands

- Over 400 signatories including nearly 200 businesses representing over 20% of the global plastic packaging market to the global commitment of Ellen MacArthur Foundation.

- Consumer goods companies and retailers commit to increase recycled content in their packaging to an average of 22% by 2025, compared with the 2018 global average of just 4%.

- The recycled content targets from consumer packaged goods companies, retailers, and packaging producers amount to a demand of 5 million tonnes of recycled plastics by 2025 (with several companies still to set their 2025 targets).

- 139 companies in total, have now committed to making 100% of their plastic packaging reusable, recyclable, or compostable by 2025.
Global Sustainability Strategy – Plastics for a Circular World

This perception is valid. And the reality is unacceptable. We don’t believe any plastic should end up in the environment.

Our three-part strategy represents our commitment. We believe in plastic for a circular world.

We are inspiring and creating value with innovative solutions for responsible plastics use, reuse, repurposing and recycling.
We will deliver circular economy solutions.
Pillars to Enable Recycling and Circularity

Plastic circularity

Innovative products accelerating market segment strategy

Design for Recyclability
- Dow us uniquely positioned with resins and technologies that enable more plastic packaging to be recycled

Mechanical Recycling Product & Application development
- Develop options to improve the quality of recyclate from flexible packaging by
  - Economics & speed
  - Enabling partnerships
  - Regional infrastructure for plastic recycling

Feedstock Recycling Solutions
- Evaluate technologies for feedstock recycling via
  - Pyrolysis
  - Gasification

Renewable Solutions
- Explore and evaluate new technologies like bio-feedstocks

Building on our extensive P&SP foundation

Increasing complexity
Design for Recyclability

..is the Application Development tool to design “Sustainable Packaging” ..It is a way to create flexible packaging that can be easily “Recycled”

- Mono-material solutions and structure simplification
- All-PE pouch development with and without barrier
- TF-BOPE for all-PE structures vs OPP/OPA/OPET
- Barrier Adhesives to enhance barrier performance
- OPULUX™ high temperature gloss lacquer
- RETAIN™ integrated compatibilizer for PIR/PCR recycling
Design for Recyclability: Case Study

- A successful joint development between Dow, brand owner RB, and converter Drukpol Flexo
- New re-sealable pouch designed for recyclability and end-of-life disposal into existing recycling streams
- Using Dow’s polyethylene (PE) films, the stand-up pouch was designed for RB’s FINISH perfume-free dishwasher detergent line.
Dow’s Formulated PCR Product Details: AGILITY CE

- Dow’s offering is a one-pellet formulated PCR solution with 70% post-consumer recycled content
- This formulated resin will be used in the core-layer of the collation shrink film with virgin resins in the skin layers
- Depending on structure and layer ratio, this will give approximately 35-50% in the overall structure
- Film and application test data can be provided on request
- Formulation design and trial support will be provided by Dow
- Samples available for trials on request, commercial product will be available early 2020
Benefits of Dow’s Formulated PCR Resins

- Keeps waste away from landfill, oceans & environment
- Consistent quality & performance
- Suitable third-party certification
- Reduce dependency on virgin plastics from fossil fuels
- Lower carbon footprints & energy savings*
- Socio-economic benefits in the value chain
Dow’s announced an agreement with the Fuenix Ecogy Group, Netherlands for the supply of pyrolysis oil feedstock made from recycled plastic waste.

This feedstock will be used to produce new polymers at Dow’s production facilities in Terneuzen, Netherlands.

Products will be certified by mass-balance and scale-up is expected in 2020.
Feedstock Recycling: Benefits

- Plastics produced by Chemical Recycling is comparable to virgin material.
- Chemical recycling increases the types of plastics that can be recycled, this is essential for meeting ever increasing recycling targets and commitments from governments and brand-owners.
- Chemical recycling creates a complete closed loop for plastics, moving towards a truly Circular Economy.
- Chemical recycling increases the number of products and applications in which recycled plastics can be used including high quality food contact applications.
Bio-Based Renewable Polyethylene

A lower carbon footprint offering to help reduce dependency on fossil fuel based feedstock
Bio-based Renewable PE: Benefits

- Replacing fossil products and raw materials
- Sustainable forestry
- No food/feed competition
- 57% fewer CO2 emissions
- No direct or indirect change in land use

Cradle to gate analysis done for bio-based LDPE vs Fossil fuel LDPE completed by Anthesis for our customer ELOPAK with Dow and UPM inputs
Summary

• Plastic waste is a major challenge in Asia for today and the future
• Redesign of plastic packaging is necessary to improve recyclability and value increase of waste
• Dow is working with value chain partners programs to change the linear economy of plastics to make it more circular
• Plastic resin producers are ready to change, Brand Owners are ready to change, Customers are ready to change, Government is ready to support the change.

Are you ready?
Thank you