

# **Advancing Sustainable Solutions for the Automotive Industry**

**Through our Polypropylene Compounds offering**

**EXTERNAL CUSTOMER PRESENTATION**

# Our Products are Advancing a Range of Solutions in Nearly Every Geography and Sector of the Economy



## Food safety & access

Food packaging and films that improve freshness, portability and extend shelf-life



## Cleaner air & fuel efficiency

Stronger, lighter plastics support increased fuel efficiency



## Sustainable & modern living

Materials that form components used in solar panels, wind turbines, children's toys, cosmetics, leak- and shatter-proof containers



## Clean water

Stronger, longer-lasting pipes used in municipal water systems and key elements used in water filtration systems



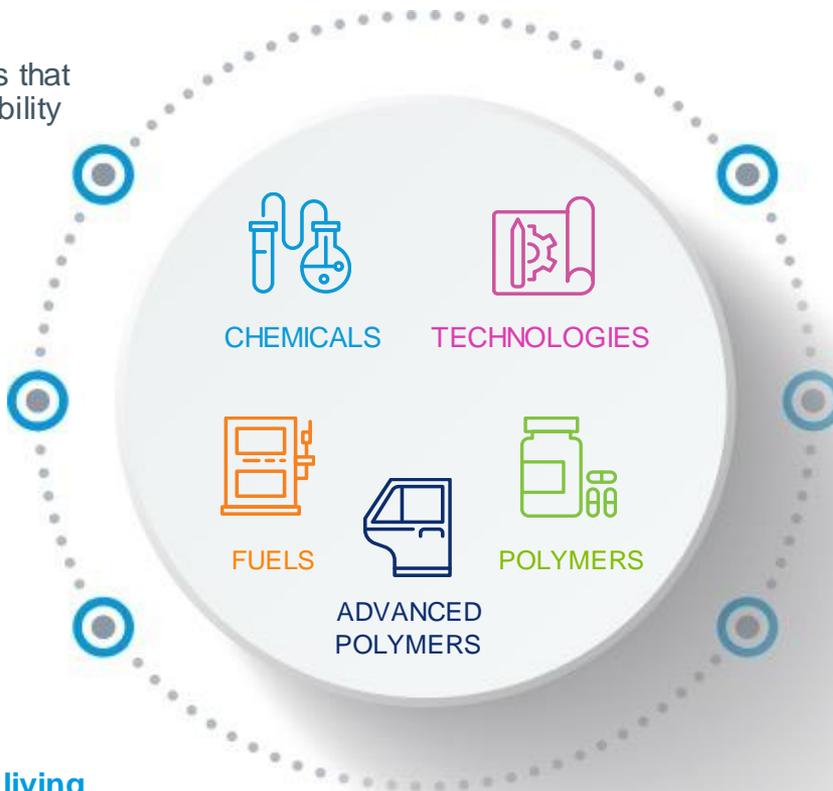
## Quality healthcare

Improved medical supplies such as synthetic latex gloves, hand sanitizers, biohazard bags and pill coatings



## Agricultural efficiency

Lighter machinery, crop protection and soil conditioning used to be more efficient in agroprocessing



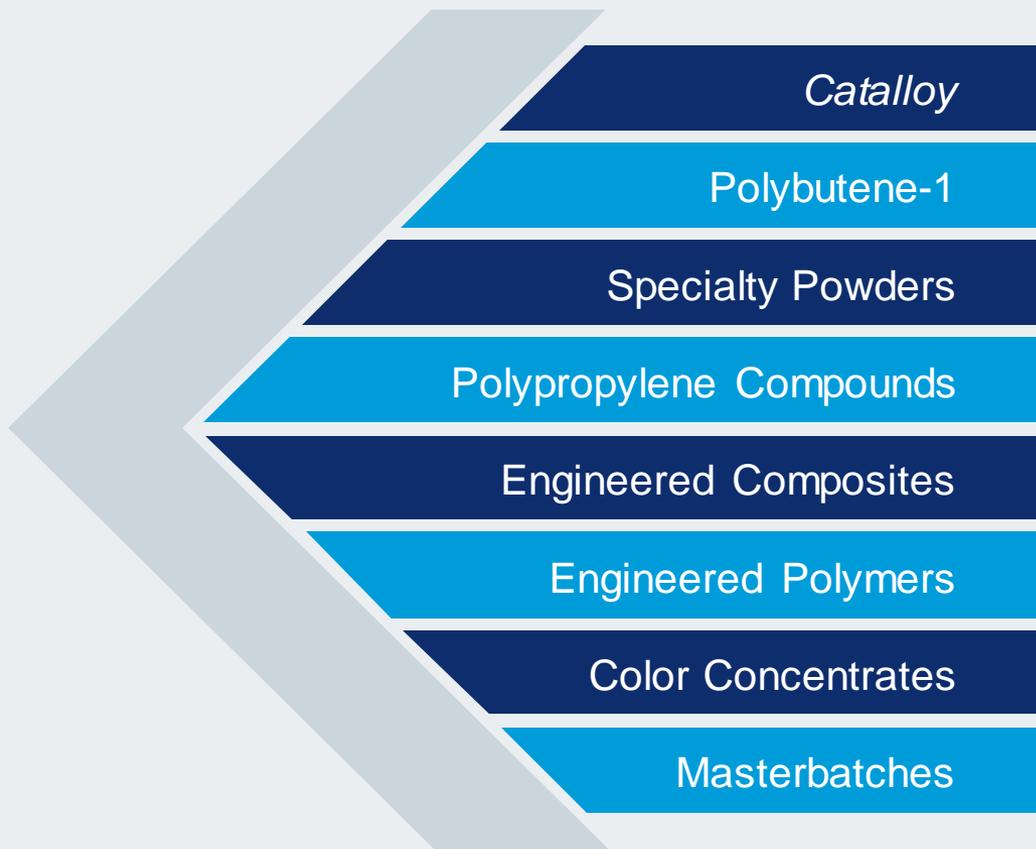
# Advanced Polymer Solutions delivers solutions in 8 core product areas



## ADVANCED POLYMERS

Our diverse portfolio is used to create customizable products including:

- Automotive parts
- Electronics / appliances
- Differentiated packaging
- Construction materials



# Polypropylene Compounds

## Typical Markets & Applications

### Automotive

- Fascias
- Grilles
- Spoilers
- Cowl Vents
- Liftgates
- Interior Trim
- Dashboards
- Fuse Boxes
- Fan Shrouds



### Building & Construction

- Stadium Seats
- HVAC Components
- Hospital Beds
- Garage Doors
- Furniture



### Agriculture

- Lawn & Garden Tools
- Heavy Equipment Interiors/ Exteriors
- Engine Shrouds
- Ball Valves
- Couplings



### Consumer Goods / Appliances

- Washers/ Dryers
- Housewares
- Power Tools
- Garbage Disposals



### Electrical / Electronics

- Capacitor Housings
- Battery Caps
- Wire & Cable
- Electrical Panels



### Heavy Truck / Recreational Vehicles

- Fascias
- Exterior Trim
- Interior Trim
- ATV Roofs
- Truck Side Skirts
- Refig. Doors
- RV Panels



# Polypropylene Compounds

Advancing Solutions and Creating Value for Customers

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## Focused

*We are the leading supplier for the automotive and appliance industry through a global portfolio dedicated to innovation and sustainability*

## Trusted

*Our team of employees is dedicated to become the partner of choice for our customers, honouring our commitments and supplying quality products reliably*

## Innovative

*Our talented R&D team works to create innovative products to help our customers advance in creating the cars and appliances of the future*

## Solutions

*We offer one of the industry's most comprehensive portfolios to address our customer needs to deliver on weight reduction, cost reduction, high-volume production, specialization and processing ease*

# We are leaders in the industry

1# Producer of **polypropylene compounds** globally



## **Advancing Solutions for our Automotive Customers**

# Polypropylene Compounds

Our solutions focus on various automotive applications

## Under the hood:

- Frontend modules
- Battery casings
- Filter housing
- Heater / Ventilation / Air Conditioning
- Lamp housing

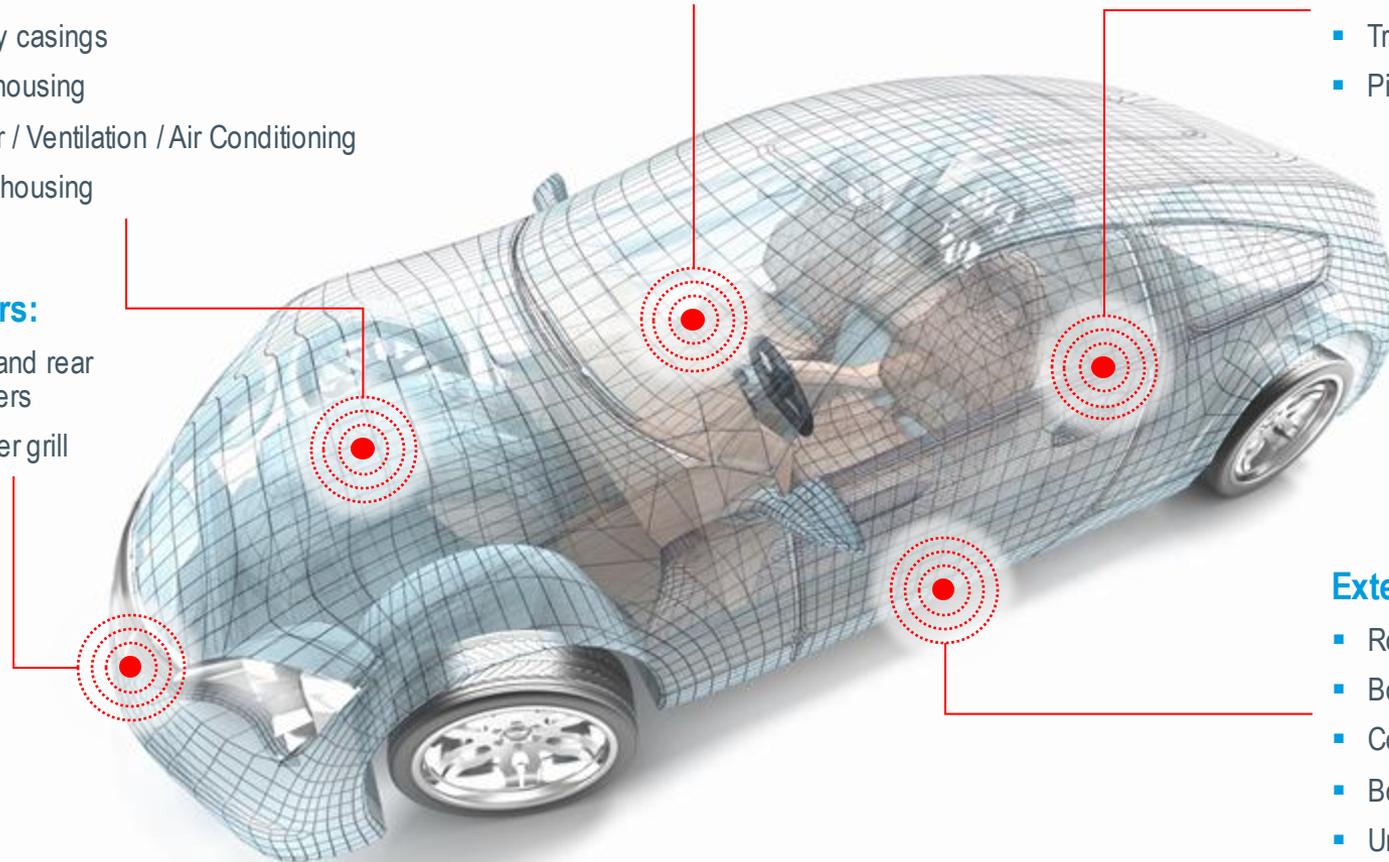
## Bumpers:

- Front and rear bumpers
- Bumper grill

## Instrument panel & central console

## Interior Trim:

- Door panel
- Trunk trims
- Pillars



## Exterior Trim:

- Rocker panel
- Body side molding
- Cowl vent grill
- Body panel & spoiler
- Underbody shield

# Polypropylene Compounds

## Product Family Differentiation

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**HOSTACOM**

- Ideal for interiors applications
- Excellent aesthetics combined with scratch resistance
- Highest emission & odor standards



**HIFAX**

- Ideal for exterior applications
- Outstanding balance of impact, stiffness and flow
- High quality surfaces with mold-in-colors and metallic effects



**SOFTTELL**

- Unique combination of low gloss and excellent scratch resistance
- Minimal warpage and excellent dimensional stability
- Uniform surface appearances

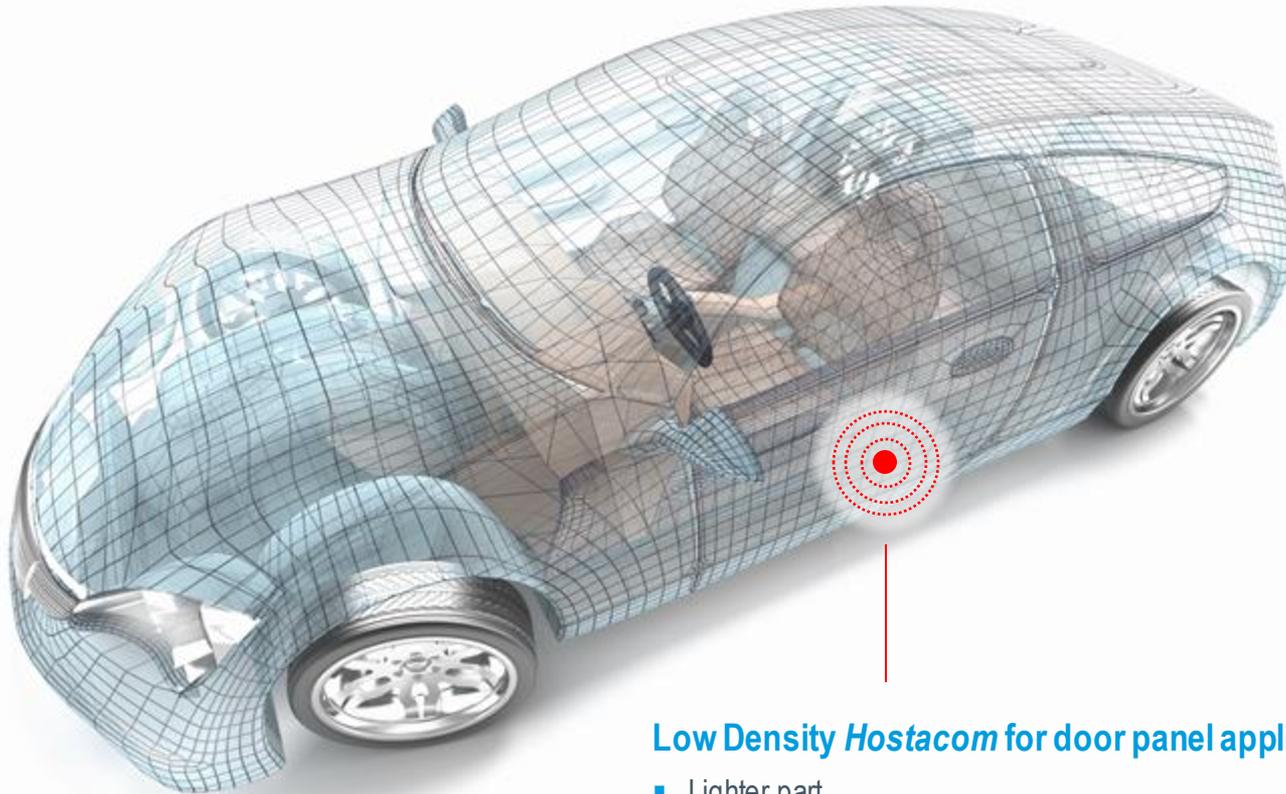


**POLYFLAM**

- Flame retardant solutions ideal for automotive and the electromobility

# Polypropylene Compounds

Advancing Lightweight: Innovating in low density



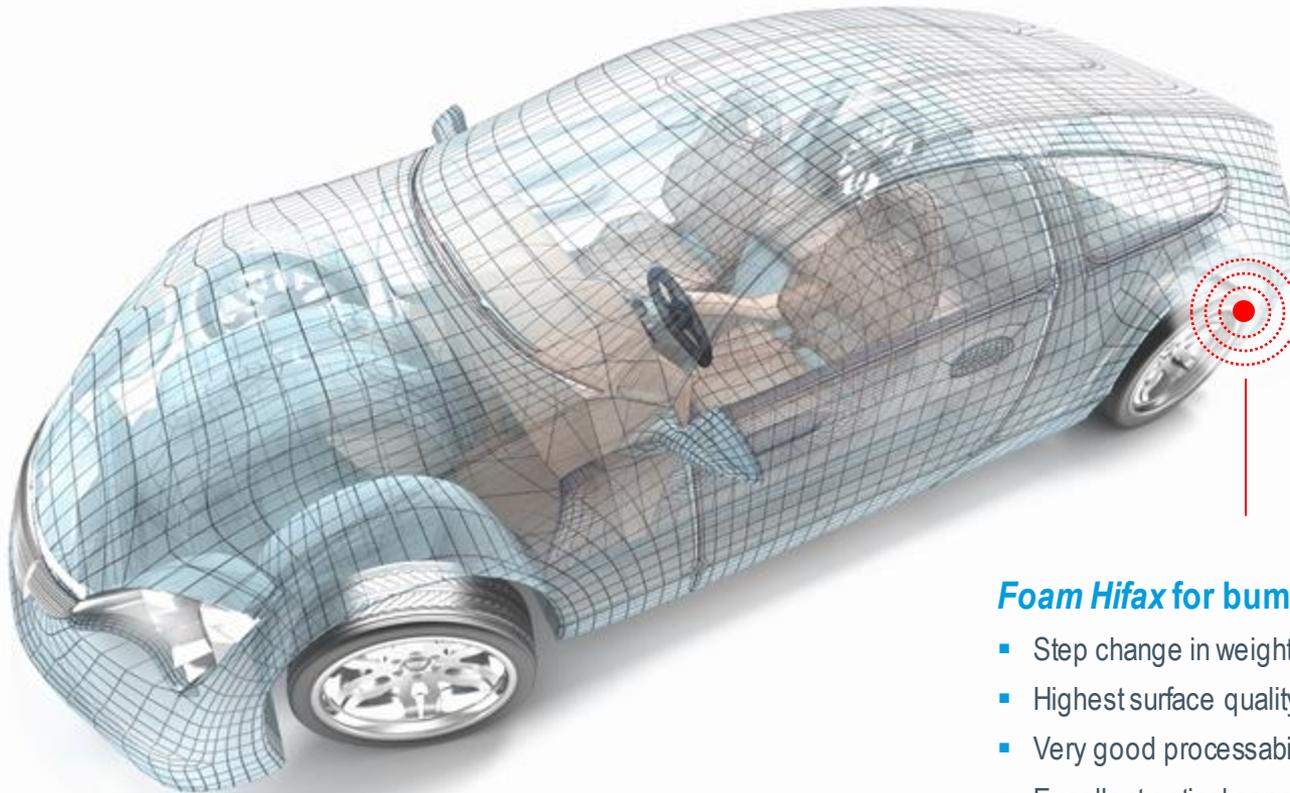
## Low Density *Hostacom* for door panel applications:

- Lighter part
- Excellent scratch resistance
- Improved tiger stripe performance
- Very good processability

# Polypropylene Compounds

Advancing Lightweight: Innovating in foam technology

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## **Foam Hifax for bumper skirt applications:**

- Step change in weight reduction
- Highest surface quality
- Very good processability
- Excellent optical appearance

## Our Approach to Sustainability

## Message from CEO Bob Patel

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- We now have a deeper understanding of the business risks and opportunities of transitioning to a low-carbon, circular economy.
- Our actions to tackle three global challenges:
  - Eliminating plastic waste
  - Addressing climate change
  - Supporting a thriving society



**Bhavesh V. (Bob) Patel**  
Chief Executive Officer

**Continuing our journey focused on sustainability across the enterprise**

# Our Approach to Sustainability

## GLOBAL CHALLENGES

### PLASTIC WASTE

### CLIMATE CHANGE

### THRIVING SOCIETY

## OUR PILLARS

End plastic waste in the environment

Advance the circular economy

Address climate change

Grow sustainable solutions

Enhance our workplace, operations and communities



We believe that ending plastic waste in the environment is a critical issue of our time. We are committed to helping eliminate plastic waste and are engaged in collaborative efforts across the value-chain to direct action where it is needed most.

We believe that transitioning to a circular economy will reduce resource use and enable a more sustainable future. We are advancing technologies and innovations that will help conserve finite resources and retain their value for as long as possible.

We believe that climate change is one of the most important global challenges both now and for future generations. We support the ambitions of the Paris Agreement and are reducing greenhouse gas emissions intensity from our operations to deliver solutions that help advance a low-carbon economy.

We believe growing our portfolio of sustainable solutions will help address society's most pressing challenges. By doing so, we will continue to reliably produce products and offer solutions that are critical to improving the quality of life for billions around the world.

We believe the health and safety of our people and the communities where we operate are our highest priorities. We are committed to operating our company sustainably to deliver industry-leading performance, and enhancing our workplace and communities through the power of many.

Using our scale and reach to make a positive impact across our value chains

# Our approach to Sustainability

We have developed five program areas to address the key overarching challenges:

PLASTIC WASTE



End Plastic Waste in the Environment



Advance the Circular Economy



Address Climate Change



Grow Sustainable Solutions



Enhance our Workplace, Operations & Communities

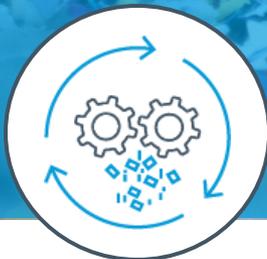
## Our ambition

- Produce and market 2 million metric tons of recycled and renewable-based polymers annually by 2030
- Achieve a 15% reduction in CO<sub>2</sub> emissions per ton of product produced by 2030, compared to 2015 levels
- Help divert millions of tons of plastic waste in multiple cities across the globe\*
- Support 100% reuse, recycling or recovery of plastic packaging by 2040\*\*
- 0 pellet loss to the environment

Using our scale and reach to make a positive impact across our value chains

\* AEPW ambition by 2025 and beyond  
\*\* ACC and PlasticsEurope goal

# LyondellBasell's APS – Polypropylene Compounds



## Mechanical Recycling

Compounds derived  
from mechanically  
recycled plastic waste



## Renewable Feedstocks

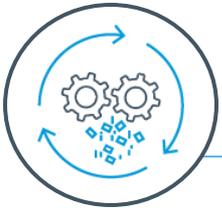
Compounds derived  
from renewable  
resources\*



## Advanced Recycling

Compounds derived  
from Molecular  
Recycling Technology\*

\*on a mass balance approach



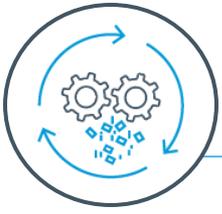
# Mechanically Recycled Compounds can help advance your design into a more sustainable model

**We provide tailor made solutions that address technical challenges of the industry:**

- Excellent aesthetics and surface finishings
- High performing weatherability
- Low VOC and odor

Our Polypropylene Compounds solutions offer CO<sub>2</sub> reduction for high performance products

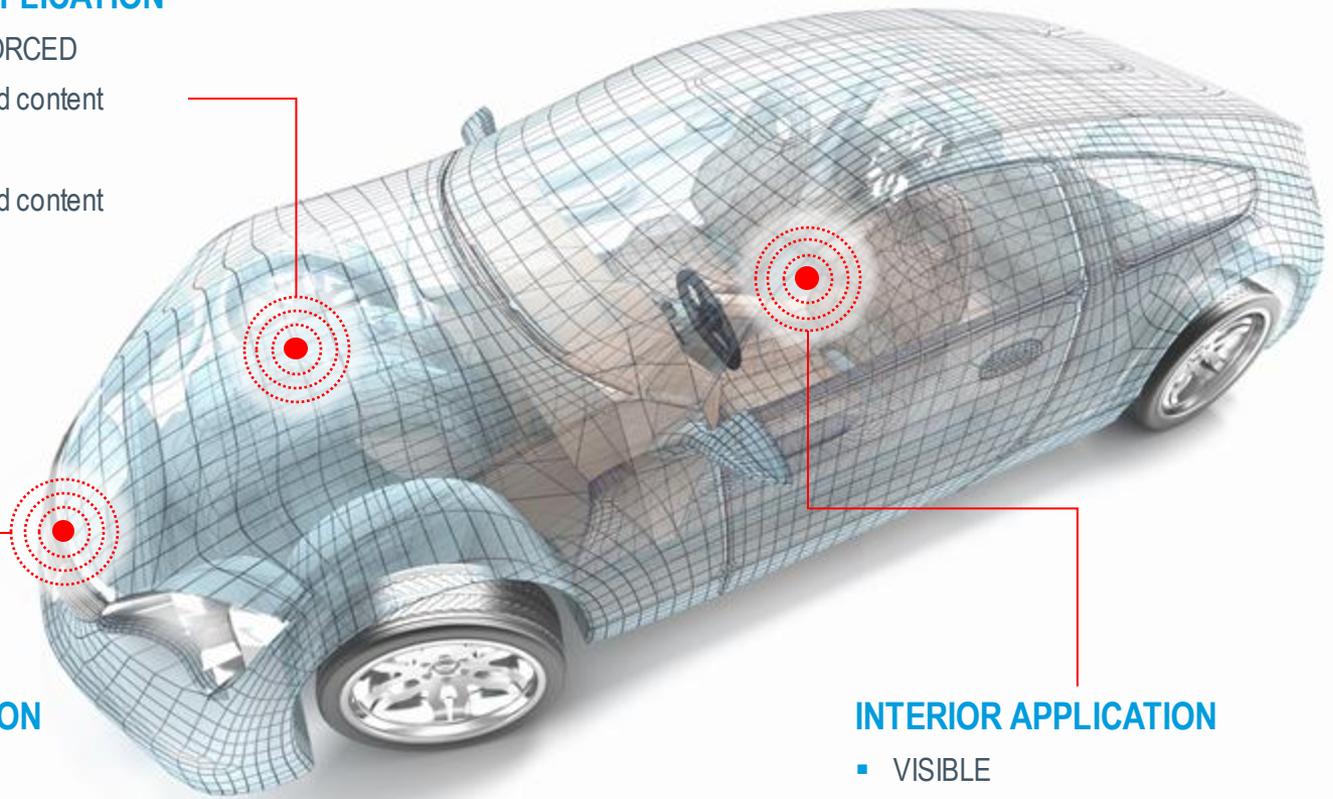




# Our Compounds solutions offer advanced performance while increased use of recyclates

## UNDER THE HOOD APPLICATION

- GLASS FIBERS REINFORCED
  - Up to 65% of recycled content
- MINERAL FILLED
  - Up to 65% of recycled content



## EXTERIOR APPLICATION

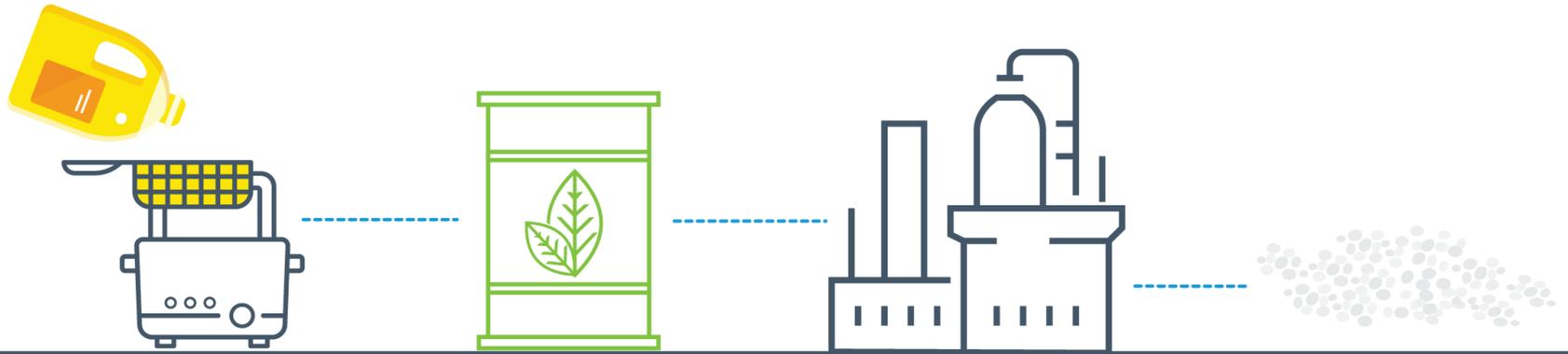
- VISIBLE
  - Up to 40% of recycled content
- NON VISIBLE
  - Up to 65% of recycled content

## INTERIOR APPLICATION

- VISIBLE
  - Up to 30% of recycled content
- NON VISIBLE
  - Up to 65% of recycled content



## Renewable drop-in solutions offer significant CO<sub>2</sub> reduction



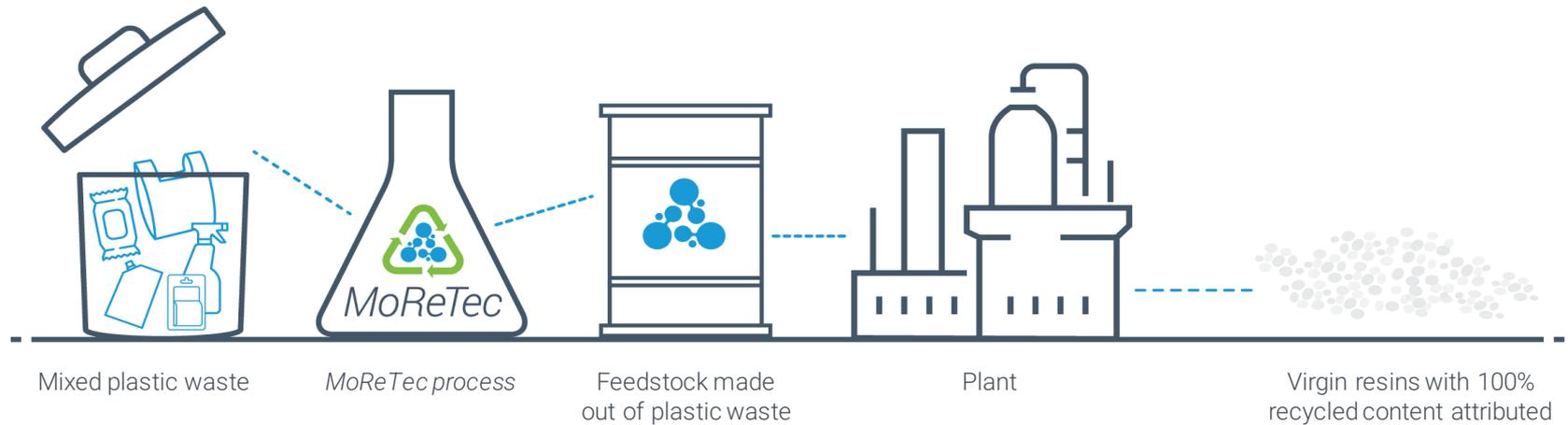
**LyondellBasell** and Neste Collaboration. First simultaneous production of PP and PE using **renewable raw material**

[Video](#)

- Feedstock from renewable raw materials, such as residue vegetable oils
- 3<sup>rd</sup> Party Certification
- Reduced CO<sub>2</sub> footprint
- One to one virgin quality / Drop in solution for highly regulated applications
- Part of our *Circulen* product portfolio



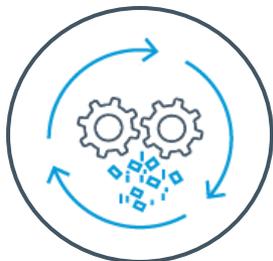
## Advanced Recycling to complement current solutions portfolio



LyondellBasell **Molecular Recycling Technology** will convert residual, mixed plastic waste back to its molecular form

- Processes multilayer and hybrid plastic materials, which can't be easily recovered by mechanical recycling
- The materials are broken down to cracker feedstocks utilizing a catalyst.
- The feedstock is used to produce virgin resins.

# We offer solutions supporting the transition to a low-carbon, circular economy



## Mechanical Recycling

Compounds derived from mechanically recycled plastic waste



## Renewable Feedstocks

Compounds derived from renewable resources\*



## Advanced Recycling

Compounds derived from Molecular Recycling Technology\*

LyondellBasell **Compounds** support **lower-carbon** solutions for high performance applications

- As a 1# producer of polypropylene compounds globally
- We offer different technological solutions
- To help you transition to a low-carbon, circular economy

\*on a mass balance approach

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## Appendix Slides



**New pilot plant** facility in Ferrara, Italy. **Moving another step closer** to converting post-consumer plastic waste into new plastics on a commercial scale

[Video](#)

- *MoReTec* based product\* will be **marketed under the *Circulen*** brand.
- *Circulen* polymers will be linked to recycled content
- Complementary to mechanical recycling as it expands application options
- Provides a solution for highly regulated food and medical applications.

\*on a mass balance approach