

Makrolon® RE

Climate-neutral Polycarbonates for
the Healthcare Industry



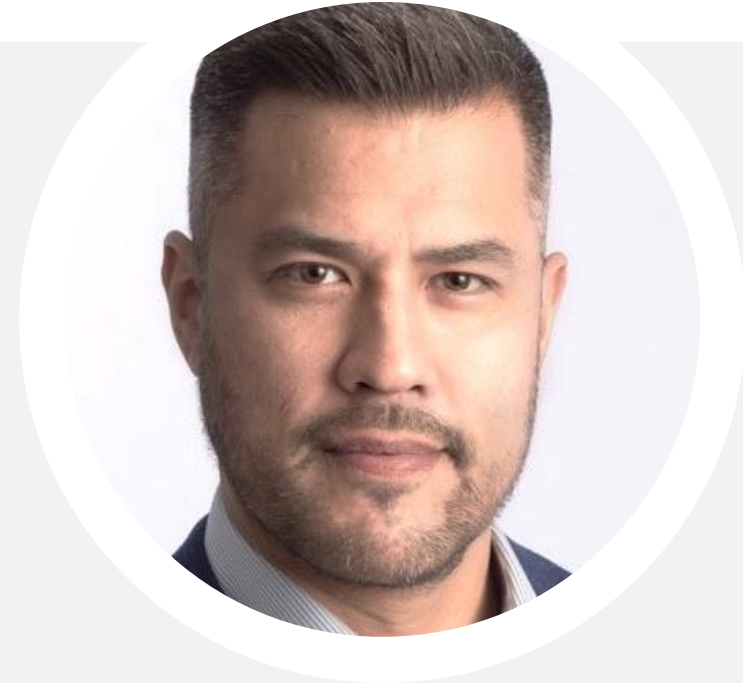
An introduction of our presenters..



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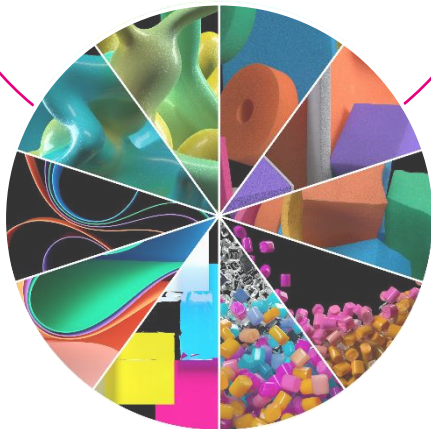
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Plastics – the 21st century material

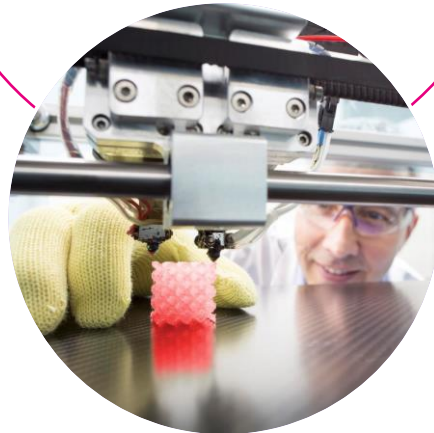
Why are Plastics relevant in our Society?



Excellent
properties



Revolutionary
possibilities



Valuable as
resource



Essential
today and
tomorrow

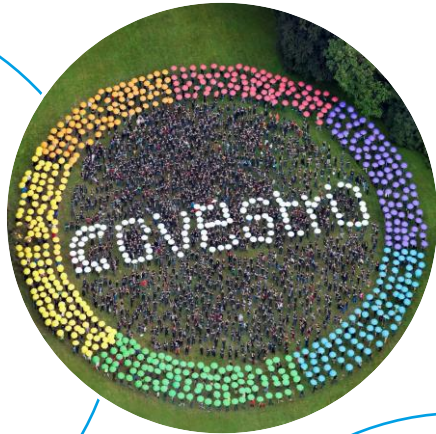


Covestro – leading in the world of plastics



Strong

- €10.7 bn in sales
- ~18,000 employees¹



Useful

- Plastics, pre-products and solutions
- For many industries



Global

- ~50 production sites globally
- Close to customers and partners



Innovative

- ~1,500 employees in research and development
- 80 years of ideas and inventions



Our vision – promote circular economy



Circular economy enables a climate neutral future

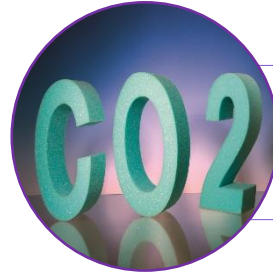
- Circular economy is the key to resource conservation, climate and environmental protection
- Plastics are a driving force for implementing circular economy



We want to become fully circular

- We want to contribute to make circular economy the global guiding principle ...
- ... and anchor it across the whole company

Covestro's approach to sustainability



Alternative raw materials



Innovative recycling

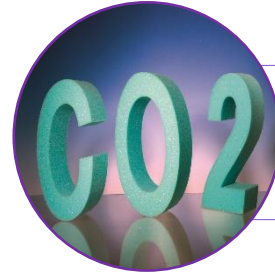


Joint Solutions



Renewable energy

Covestro's approach to sustainability



Alternative raw materials



Innovative recycling



Joint Solutions



Renewable energy

Alternative Raw Materials are introduced into the value chain

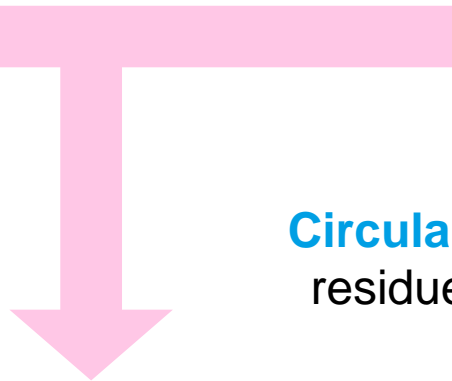
Raw material categories defined by ISCC PLUS standard



Bio: feedstock from virgin biomass



Circular : feedstock from waste / processing residues which are not landfilled or burned



Bio-circular: waste and residues of biological origin (e.g. used cooking oils)

Principle of Mass and Energy Balance Approach

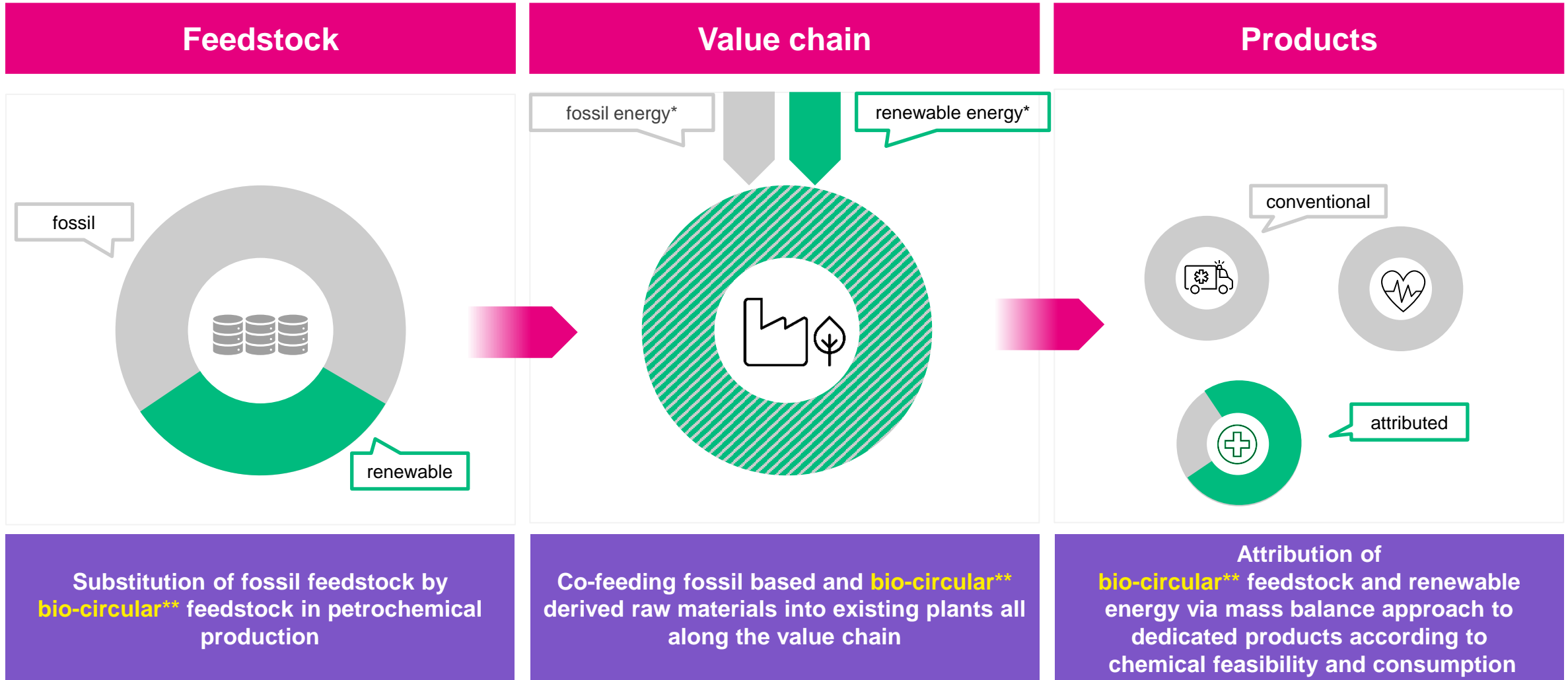


Illustration based on Nova institute

* Energy is allocated directly to the process and according to ISCC PLUS to renewable raw materials.

** According ISCC PLUS: Bio-circular refers to waste and residues of biological origin



Makrolon[®] RE

The **physical, mechanical, thermal, optical, weathering and processing properties** of Makrolon[®] RE resin are **identical** to conventional Makrolon[®] resin and are a **drop-in solution** to meet sustainability goals

Equivalency verified by Covestro



Makrolon® RE resins are **Identical** to conventional Makrolon® resins*

*For example: You can **replace the existing** Makrolon® 2458 with Makrolon® 2458 RE*

	Raw Material Specification	Resin Production Process	Product Formulation	Product Specification	Bio-compatibility
Makrolon® 2458	✓	✓	✓	✓	✓
Makrolon® 2458 RE	✓	✓	✓	✓	✓

Low Carbon Footprint Makrolon® RE saves fossil resources

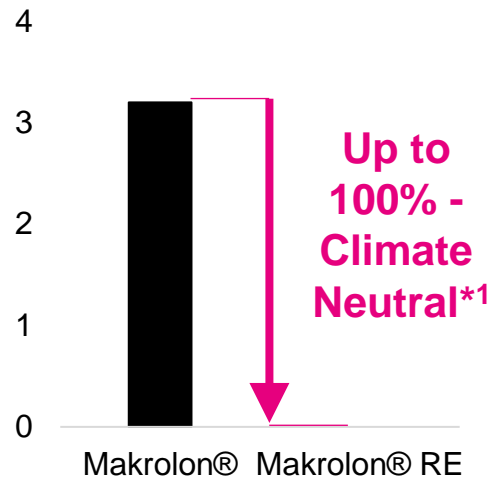


Polycarbonates with claimable environmental benefits



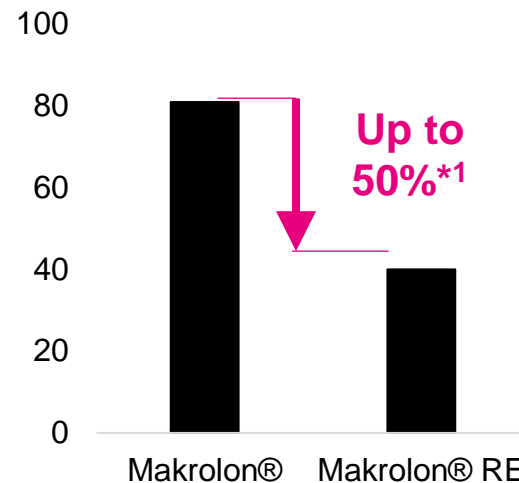
Climate contribution:
Lower Carbon Footprint

Global Warming Potential (GWP) incl. biogenic C (kgCO2e/kg)



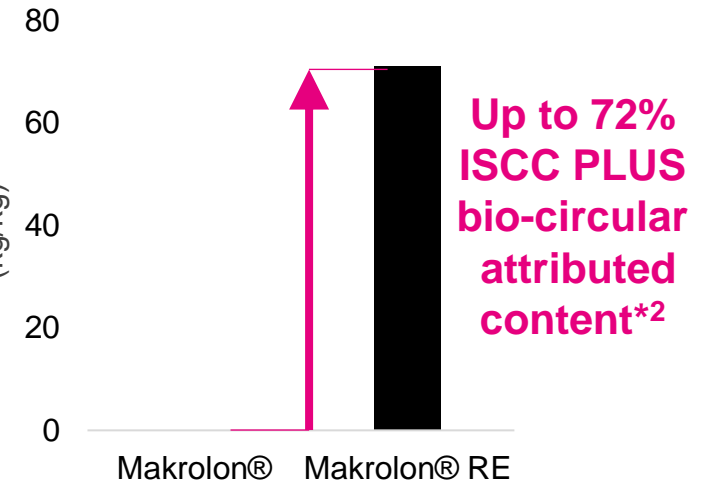
Preserving resources:
Lower fossil resource depletion

Abiotic depletion potential, fossil (MJ/kg)



Use of alternative
raw materials

Attributed renewable content (kg/kg)



* Specific product savings differ according product properties. Shown values represent planned selected Makrolon RE grades.

¹ Cradle to gate, , biogenic carbon included. According preliminary reviewed LCA impact assessment according to CML 2001 - Aug.2016.

² According to ISCC PLUS sustainability declaration via mass balance.



Available now¹

Makrolon[®] RE

Medical grades
EtO / Steam
Sterilization

Makrolon[®] 2258 RE
Makrolon[®] 2458 RE
Makrolon[®] 2658 RE
Makrolon[®] 2858 RE

Medical grades
Gamma / e-beam
Sterilization

Makrolon[®] Rx2530 RE
Makrolon[®] Rx1805 RE

Optical grades

Makrolon[®] LQ3187 RE
Makrolon[®] LQ2647 RE
Makrolon[®] LED2245 RE

Coming in Q2 2022

Bayblend[®] RE

Makroblend[®] RE

Apec[®] RE

Covestro Healthcare Products – Makrolon® RE

...helping your devices become moRE sustainable



Drug Delivery Device Components



Dialysis Filters



IV Connectors

Our Value Proposition to the **Healthcare** industry remains

For 50 years, Healthcare OEMs have relied on our materials and industry expertise:

- Consistency, quality and long-term reliable supply
- Global product availability from sites following GMP
- Innovative materials meeting rigorous Healthcare requirements
- Excellent technical and regulatory service

Innovating our Healthcare portfolio with **Makrolon® RE**

Biocompatible per
ISO 10993-1 and
USP Class VI for
contact of 30 days or
less

Product
stewardship

Notification of
change (NoC)

FDA Device (MAF)
and Drug Master
File (DMF)
available upon
request

Manufactured at
ISO 9001 certified
sites that follow
GMP standards



Covestro's approach to sustainability



Alternative raw materials



Innovative recycling



Joint Solutions

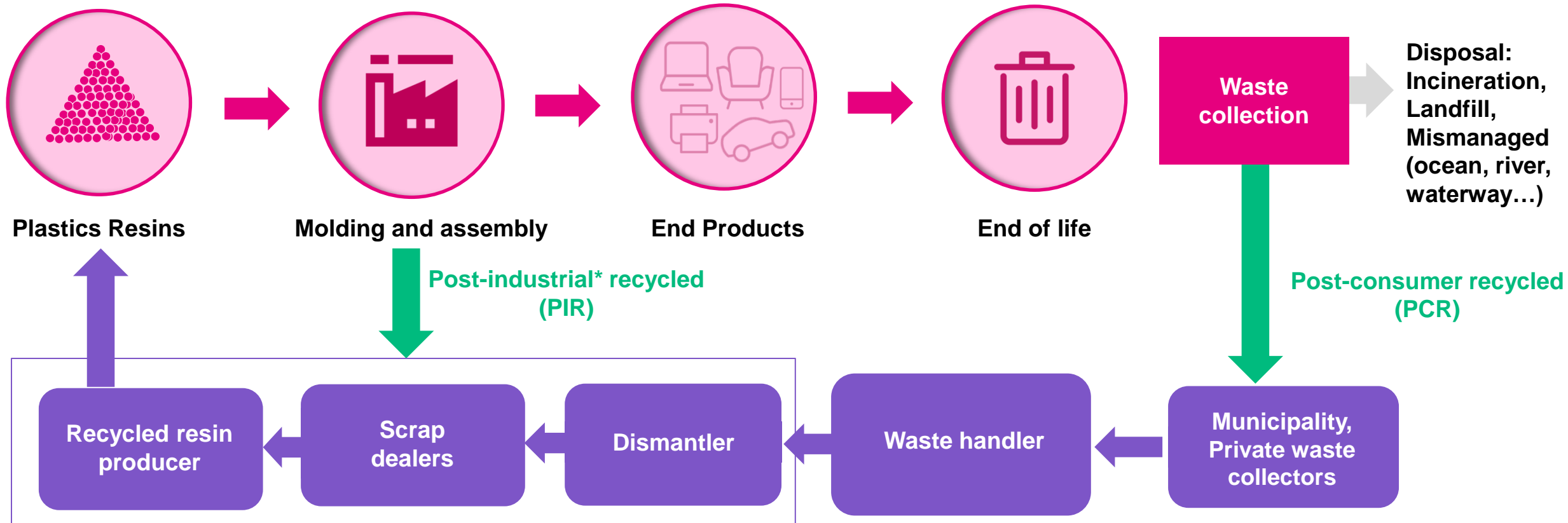


Renewable energy

Polycarbonate recycling process



Whole recycling process requires many quality control steps and specification



Consistently high quality with proof of sustainable commitment



Certification and eco-profiles

Strict Supplier Management and Internal Quality Control System

Yearly audits implemented with Code of Conduct and Operations

Committed to responsible recycling:

- Quality
- Chemical safety
- Traceability
- Sustainability

Supplier Code of Conduct
Yearly audit items from Ethics, Labor, HSEQ to Management System



Life Cycle Assessment
Up to 50% carbon footprint reduction compared to virgin grades



Chemical Safety Management
Comply with RoHS Directive EU and EU regulation of REACH



Recycled Source Certificates
Third-party certificates endorsed by TÜV or UL ECV (Environmental Claim Validation)

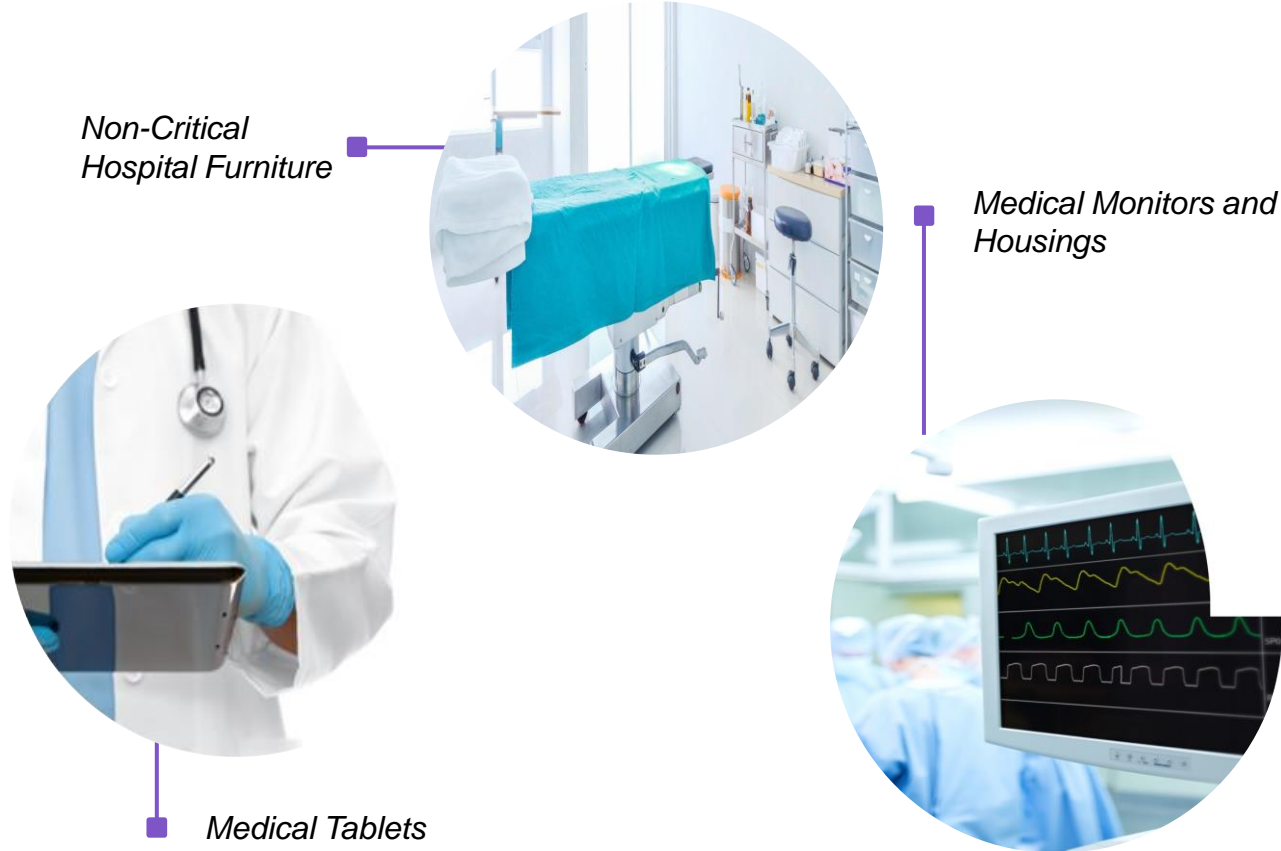
Mechanically recycled grades

A solution for applications without medical requirements

PCR & PIR polycarbonate solutions

A strong portfolio that meets performance and eco-label requirements

- PC and PC blends
- Up to **75%** recycled content
- Up to **50%** carbon footprint reduction
- High performance: high impact strength, heat-resistant, flame-retardant and enabling thin-wall design
- **Non-Medical Grades**



For more information on our PCR/PIR Portfolio please contact a Covestro Representative

Your go-to partner on sustainability solutions

A sustainable product portfolio with innovative services and solutions



Certified Circular Products

- Drop-in solutions with attributed renewable content
- Mechanically recycled (PCR, PIR)

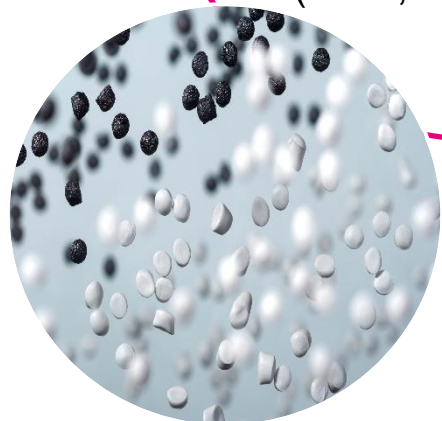


Services

- Design for circularity: Circular Design Strategies
- CMF design service

Enabling circular business models

- Closed/open loop recycling
- Material tracing

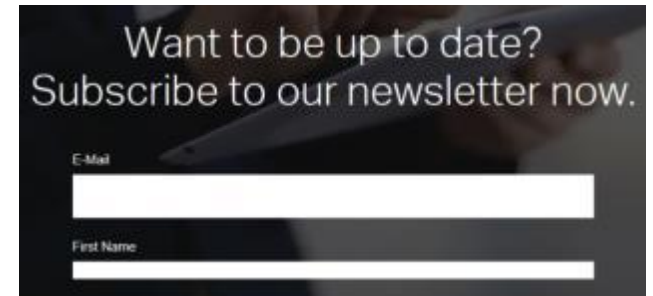


Additional resources

New technical information is shared via our **Healthcare Polymers eNewsletter**



- Subscribe to the newsletter [here](#)
- Click on 'Explore now' under 'Medical Polymers'
- Click on 'Subscribe now'
- Enter your contact information
- Click on 'opt in' within your confirmation email



Log into <https://solutions.covestro.com> for



- Product Datasheets, Safety Datasheets (SDS), Technical Literature, Peer-Reviewed Papers and Design Guides



Exciting NEW Journey

We're looking forward to joining you on this exciting new journey to become fully circular




Thank You!

Certified products on their way to circularity available now!

For more information:

irving.pazchagoya@covestro.com

A large, vibrant pink arrow curves from the top left towards the bottom right. In the foreground, a green leaf is shown with a large, golden, teardrop-shaped oil drop on its surface. The leaf is partially obscured by the arrow and a pink circle.

Let's
realize it
together!



Forward-looking statements

This presentation may contain forward-looking statements based on current assumptions and forecasts made by Covestro AG.

Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Covestro's public reports, which are available on the Covestro website at www.covestro.com.

The company assumes no liability whatsoever to update these forward-looking statements or to adjust them to future events or developments.