

Mass balanced raw materials for sustainable cast elastomers

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Agenda

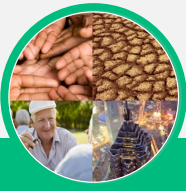
- Introduction
- Mass balance approach – Key attributes and certification
- What does mass balance look like for Covestro?
- Conclusion



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The world is changing
We must make the idea of the circular economy a global guiding principle



Climate change
Population growth
Demographic change
Urbanization

WE MUST MASTER THESE CHALLENGES WITH SUSTAINABLE AND INNOVATIVE SOLUTIONS



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Answering a key question for cast polyurethane molders

Sustainable technologies for cast polyurethanes

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"What options do I have to implement sustainable solutions for cast polyurethane elastomers?"

BIO CONTENT: 80% bio-based content via mass balance

CO₂: 30% CO₂ reduction via mass balance

RECYCLING: mechanical recycling of cast PU into granules

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Incorporating bio-based raw materials into cast polyurethane

Bio-based technologies

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Segregation

Physical separation must ensure that the sustainable product is also **clearly identifiable as 100% sustainable** at every point in the manufacturing and supply chain.

Mass Balance

Mass balance may **mix sustainable and non-sustainable** product at any stage of the manufacturing and supply chain.

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Key attributes and certification

Mass Balance (1/2)

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"Chain of Custody" Model

Raw Materials → Manufacturing Process → Finished Goods

Commercial Uses for Mass Balance

Palm Oil	Cotton	Timber
Sugar	Soy	Biofuels

Transparency through ISCC Certification

Farms/Point of Origin → Collection Points → Processing Step → Storage → Market

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What does mass balance look like for Covestro?
Mass Balance (2/2)

Mass Balanced Raw Materials in Formulated Systems

Example

Bio-based raw materials for cast polyurethane

MDI based prepolymer

MDI (fossil-based)
TDI (fossil-based)
Polyols (fossil-based)
Chain Extenders (fossil-based)

MDI (bio-based)
TDI (bio-based)
Polyols (bio-based)
Chain Extenders (bio-based)

Com, wood, straw → Unrefined sugar → Bio-based aniline

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Key Takeaways

Sustainable technologies

- Bio-based raw materials
- CO2 polyols
- Mechanical recycling

Mass Balance Highlights

- Bio-based and fossil-based feedstocks are mixed in process
- Bio-attribution of the final product is assigned
- ISCC certification
- Allows for easy adoption
- Requires no capital investments to implement
- Can be used in an additive fashion with other sustainable technologies

Covestro Implementation

- Mass balance available globally in 2023
- Isocyanates, polyols, and chain extenders are in scope

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THANK YOU!

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