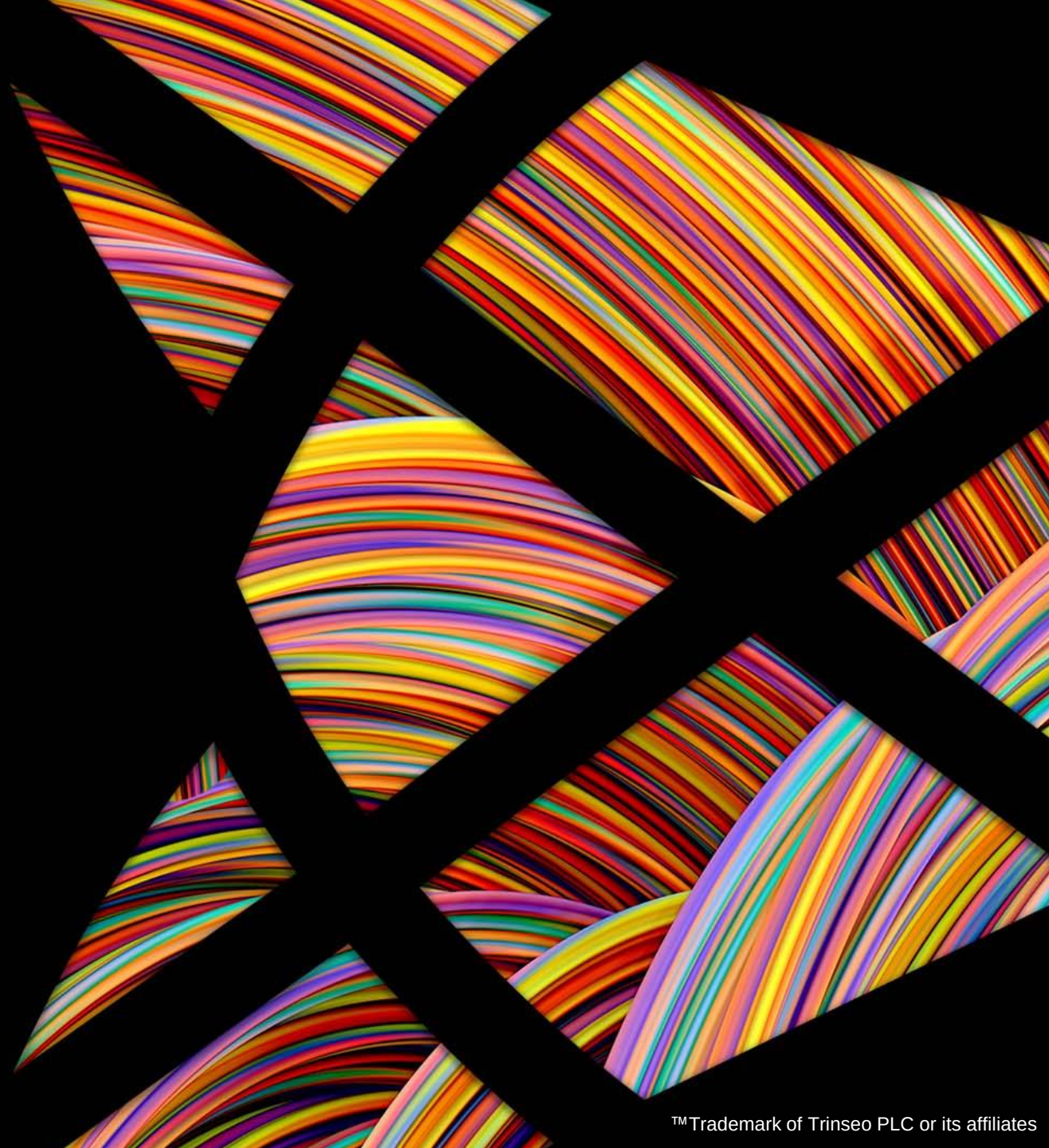
TRINSEO™

Every Material Solution Can Be Sustainable

Advancing Medical Specialty Solutions for Decades

Cheryl Weckle

Principal Scientist
Technical Service & Development



Shared Values

Improve the environmental footprint

Decarbonizing operations and assets

Delivering More Sustainable Products and Solutions

Partnering with the value chain

Climate Change Goals:

- Reduce 35% **Scope 1 & 2** GHG Emission Intensity by 2035
- Increase the share of electricity from **non-fossil sources** from 5 to 30%
- Establish a management system for **Scope 3 emissions** and being reporting and tracking scope 3 emissions

* 2017 as the base year

Sustainable Product Portfolio Goals:

- By 2025, 30% of Trinseo' technology and innovation/**R&D** efforts will be aimed at **circular economy** solutions
- By 2030, 40% of Trinseo's products will be **sustainably advantaged**
- By 2030, 50% of Trinseo products are used in applications that align with the United Nations Sustainable Development Goals (**SDGs**)

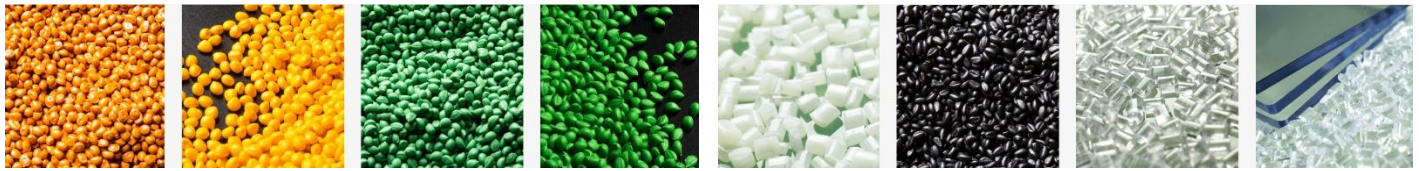
Trinseo’s Product Portfolio

Mobility | **Building & Construction** | **Consumer Goods** | **Medical**

Every Material Challenge has a Solution

Every Material Solution can be Sustainable

Plastics (Resins & Sheets) Materials



- Acrylonitrile Butadiene Styrene (ABS)
- Polycarbonate (PC)
- Long-Glass-filled Polypropylene (PP)
- Polypropylene compounds
- Polystyrene (PS)
- Styrene Acrylonitrile (SAN) Resins
- Thermoplastic Elastomers (TPE)
- Thermoplastic Polyurethanes (TPU)
- Methyl Methacrylate (MMA)
- Polymethylmethacrylate (PMMA) Resins & Sheets (Acrylic, Continuous Cast)
- Solid Surface (Acrylic, Acrylic/Polyester)

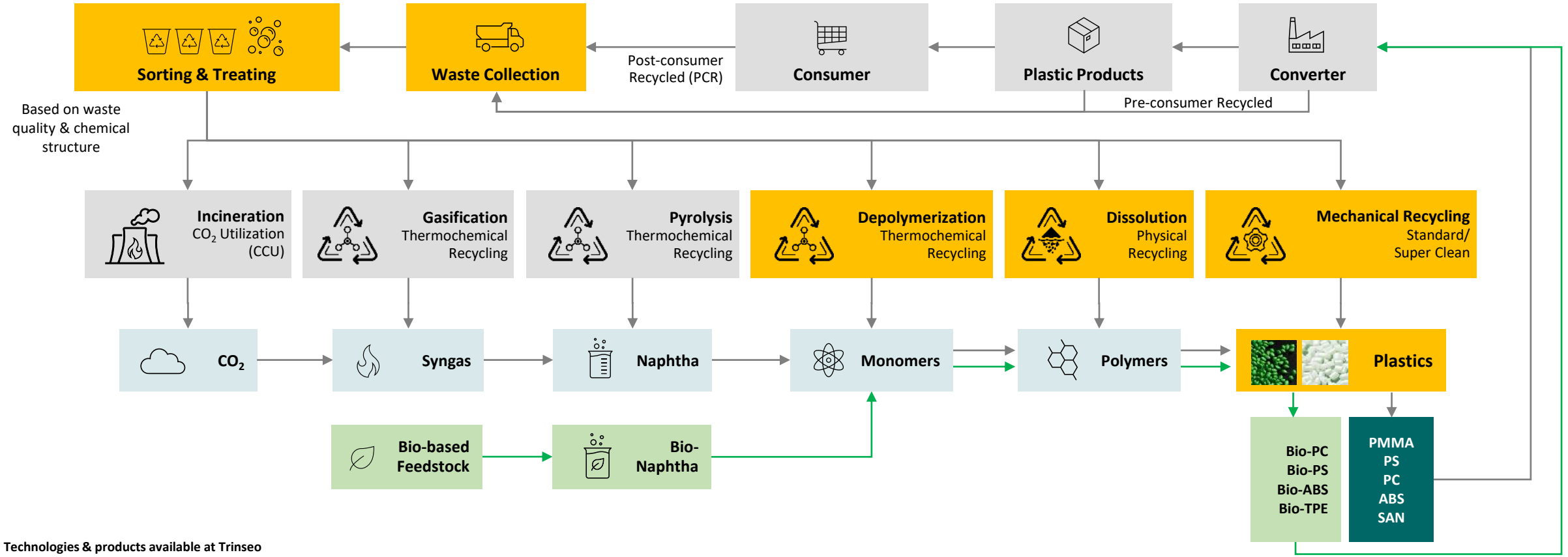
Latex Binders Materials

- Styrene Butadiene (SB) Latex Binders
- Styrene Acrylate (SA) Latex Binders
- Vinyl pyridine (VP) latex

Sustainable Technologies & Solutions

- Post-consumer Recycled Containing (PCR) solutions
- Pre-consumer/Post-industrial Recycled Containing (PIR) solutions
- Bio-based & bio-attributed solutions
- Biodegradable solutions
- Low carbon solutions
- Lighting weighting solutions
- Low VOC solutions
- Material replacement
- Mechanical Recycling
- Chemical Recycling
- Waste Collection, Sorting & Treating

Advanced Recycling Technologies I unlocking circularity



Pre-consumer material

Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. (ISO 14021)

Post-consumer material (PCR)

Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. (ISO 14021)

Depolymerization

Chemical reversion of a polymer to its monomer(s) or to a polymer of lower relative molecular mass (ISO 15270)

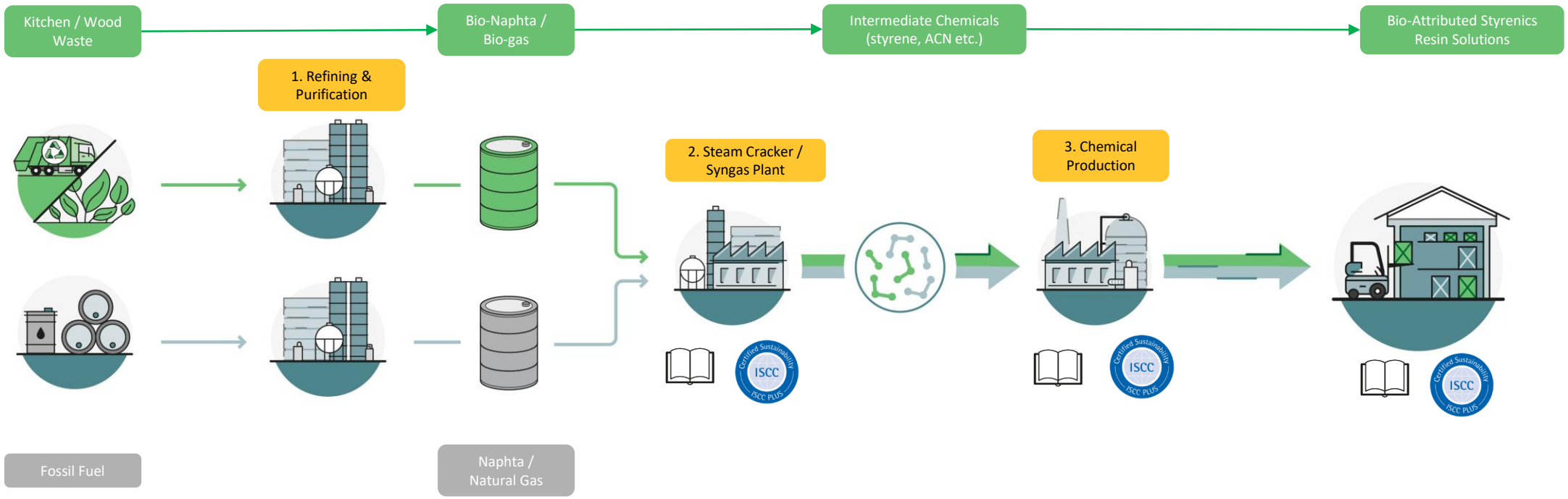
Dissolution

Use of a solvent to extract and purify the polymers

Mechanical Recycling

Mechanical recycling is recycling by re-melting after sorting and cleaning, unless not collected separately. (ISO/TR 23891)

Biomaterial Production Process



1. **Selection & preparation of bio waste, with elimination of foreign fractions to meet a certain specification, before refining** to obtain a bio-naphtha-like
2. **Mix fossil- and bio-naphtha content** in a cracker to produce intermediate chemicals like styrene, acrylonitrile etc.
3. Produce polymers and use the **mass balance rules to allocate an equivalent amount of bio-resources used as raw material to these polymers** (and further on, to the end-product used for the application)

Direct physical link between input and output is lost once feedstocks are mixed.

Physical segregation is an alternative, but it is very capital-intensive, hence a **mass balance** model.

TRINSEO Low-Carbon Polycarbonate Solutions

Mechanical recycled PC with ≥50% PCR

MECHANICAL RECYCLING of defined PC streams under ***EMERGE™ PC ECO***
Commercially since 2013
Consumer electronics industry, broad range of products
Extending to CALIBRE™ PC resins

Bio-PC with 88% Bio-content

BIO-FEEDSTOCK CRACKING
Commercially since 2022 under ***CALIBRE™ CO_2NET™ BIO***
Mass balance ISCC+ certified – All PC range available

Recycled PC with >80% PCR

DISSOLUTION (= PURIFICATION or SOLVENT-BASED RECYCLING)
Under development (in pilot phase), expected to be commercially available by 2025

TRINSEO Low-Carbon Styrenic Resin Solutions

Mechanical recycled ABS with ≥60%

MECHANICAL RECYCLING
Under Development
Wide spec production waste in cooperation with Heathland; limited volume available

Chemically Recycled SM (Indaver)

DEPOLYMERISATION (= MONOMER RECYCLING) of Polystyrene into styrene monomer.
Can be used as a complementary feedstock for SAN and ABS
Commercialization scheduled for H1/2024
Mass balance ISCC+ certified – All ABS/SAN range available

Bio-ABS/SAN with 95% Bio-content

BIO-FEEDSTOCK CRACKING
Fully Commercial since 2022 under ***MAGNUM™ / TYRIL™ CO_2NET™ BIO***
Mass balance ISCC+ certified – All ABS/SAN range available

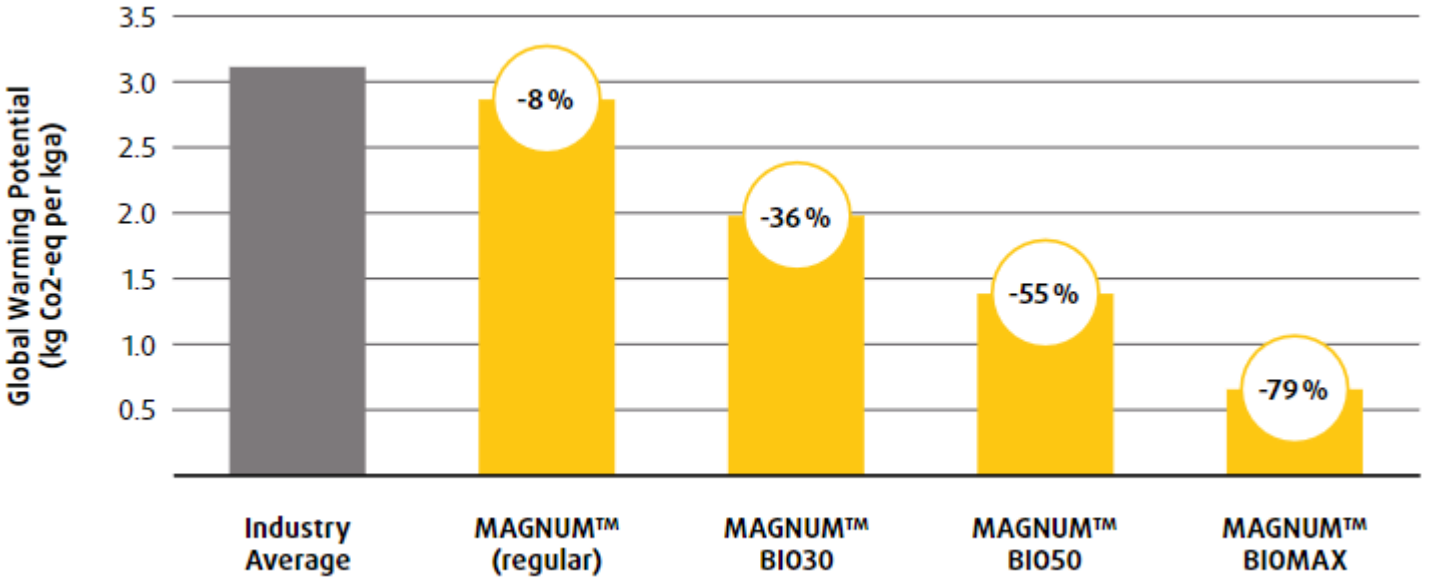
Recycled SAN/ABS with >50% PCR

DISSOLUTION (= PURIFICATION or SOLVENT-BASED RECYCLING)
Under development, expected to be commercially available by 2027

Bio-attributed ABS (up to 95%)

- Mass balance certified
- Medical Grade available

Total Product Carbon Footprint (incl biogenic carbon) for MAGNUM™ BIO grades Cradle-to-Gate



Internal Trinseo analysis

Low Carbon Material Solutions for Medical Applications

Product		Feedstock			Attributes	
Product Tradename	Polymer	Bio-based	Bio-Attributed / Bio-Circular	Sustainable Content	ISCC+ Mass Balance Cert	Comment
APIGO™ BIO MED	TPE-O	✓		≤90%		46 ShD, recyclable
MEGOL™ BIO	TPE-S	✓		≤50%		20-80 ShA, recyclable
MEGOL™ BIO MB	TPE-S		✓	≤50%	✓	20-80 ShA, recyclable
CALIBRE™ BIO	PC		✓	≤88%	✓	Standard and Glass-filled options
CALIBRE™ MEGARAD™ BIO	PC		✓	≤88%	✓	Radiation Sterilizable
STYRON™ CO_2RE™ BIO	PS		✓	85-95%	✓	
MAGNUM™ CO_2NET™ 8391 MED BIO	ABS		✓	95%	✓	
ALTUGLAS™ R-LIFE (Resins & Sheets)	PMMA		✓	≤90%		PLEXIGLAS™ in the US Chemically recycled monomer

Sustainable alternatives without sacrificing safety & performance

- BIO feedstocks
- BIO-attributed feedstocks (Mass Balance)
- Same performance as fossil-based products
- Easy substitution

Trinseo has decades of experience in providing specialty solutions to the medical industry.

TRINSEO™

Connecting ideas with solutions

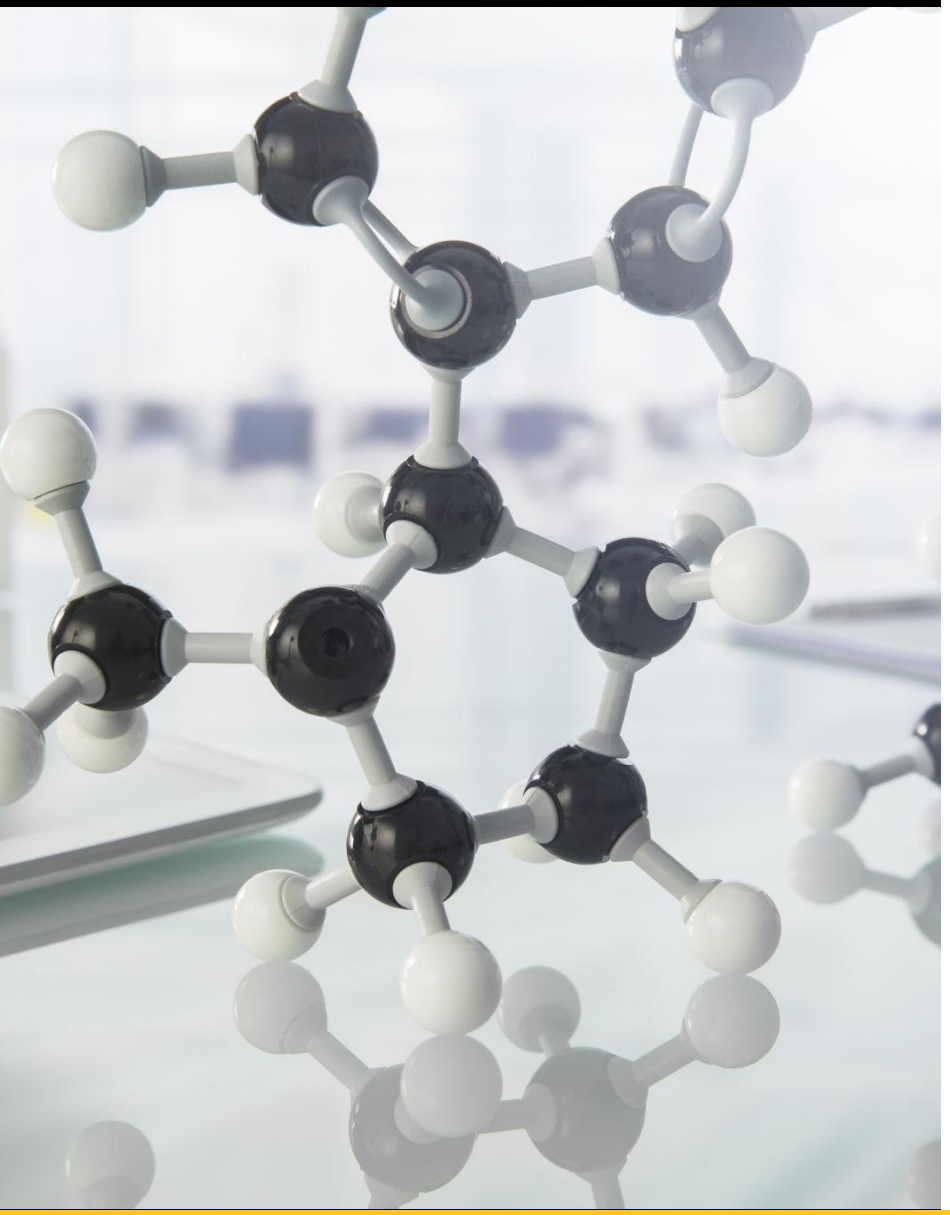
APPENDIX

Trinseo's Sustainability Goals

Category	Goal	By
Climate Change	• Reduce by 35% Scope 1 & 2 GHG emissions intensity (2017 base year)	2035
	• Increase the share of electricity from non-fossil sources from 5% to 30% (2017 base year)	2030
	• Establish a management system for Scope 3 emissions, and begin reporting and tracking Scope 3 emissions	2025
Sustainable Product Portfolio	• 30% of Trinseo's technology and innovation/R&D efforts will be aimed at circular economy solutions	2025
	• 40% of Trinseo's products will be sustainably advantaged	2030
	• 50% of Trinseo products are used in applications that align with the United Nations Sustainable Development Goals (SDGs)	2030
Supplier Responsibility	• Implement a Sustainability/CSR Due Diligence program for new key suppliers as an addition to the existing supplier on-boarding process	2025
	• 80% of our existing suppliers with recurring spend of >$100K are assessed and demonstrated to be compliant with our sustainability requirements	2030
Responsible Operations	• Reduce freshwater intake by 20%	2030
	• Reduce overall waste generation by 15%	2030
	• Reduce waste disposal to landfill to zero	2030
	• All pellet-handling sites achieve zero pellet loss to the environment through Operation Clean Sweep®	2030
Sustainable Workforce	• Achieve gender balance in the organization through filling 50% of company open positions with women; and double the percentage of women in senior management and executive positions to 40%	2030
	• All employees will have a personal employee development plan which will enable the creation of holistic learning and development strategy to be implemented by 2025	2023
	• Achieve one or more years of zero recordable injuries for employees and contractors globally	2030

15 Goals in 5 Categories in 10 Years

Scientific Approach
- Through an objective lens



We adopt scientific approaches to allow our customers to make decisions based on objective information. Data are transparent and easy to compare.

Mass Balance	Scientific Analysis	Blockchain
ISCC International Sustainability & Carbon Certification		
Trinseo plant locations and products certified with ISCC+: • Tessenderlo, Belgium & Schkopau, Germany (PS) • Terneuzen, the Netherlands (Styrene Monomer, ABS/SAN) • Stade, Germany (PC) • Rheinmuenster, Germany (Latex binders) • Hsinchu, Taiwan (PC, TPE, ABS and SAN) • Zhangjiagang, China (ABS)	**Developing internal capabilities in:** • Life Cycle Analysis (LCA) • Product Carbon Footprint (PCF)	**Value chain partnership:** • Partnered with Circularise and ISCC in a pilot blockchain project to establish traceable chains of sustainable materials