



Sustainable Solutions Line Card

MATERIAL
SOLUTIONS
TO BUILD
**A BETTER
LIFE**

OUR SUSTAINABILITY MISSION

Formerra is committed to contributing today to build a better future.





Helping Our Customers Achieve Sustainability Goals

By collaborating with suppliers focused on sustainability, we help our customers achieve their sustainability goals, such as lowering carbon emissions, reducing waste, combatting the plastic waste problem, increasing the use of renewable resources, and more!



Our Suppliers



Our Sustainable Solutions Fall Into 3 Categories

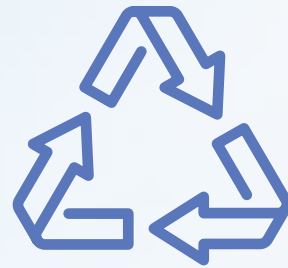


Bio-Polymers

Created from bio-derived,
renewable sources
(beginning of life)

and/or

Biodegradable or Compostable
(end of life)



Recycled Content

Post-Industrial Recyclate (PIR)
(production surplus)

or

Post-Consumer Recyclate (PCR)
(after consumer use)



Efficient Consumption

Improves manufacturing capabilities,
enhances recyclability, provides
lightweighting, and more!



Bio-Polymers

are bio-derived and/or biodegradable/compostable

Bio-Derived: Beginning of Life

- Bio-derived, also known as bio-based, materials are formulated at least in part from renewable sources, such as canola, corn, straw, wood, sugarcane and wheat
- Sustainable Impact
 - Improve resource efficiency
 - Decrease dependence on fossil fuel-based materials
 - Lower carbon emissions
 - Reduce waste

Material	Supplier	Trade Name	Sustainable Benefit
Acetal (POM)	DuPont	Delrin® RA*	95–100% bio-derived content
Cellulosics	Eastman	Tenite™	Made from a renewable resource
PA (PA 11, PA 12)	Arkema	Rilsan®	17–97% bio-derived content
PA (Copolymer)	Arkema	Rilsan® Clear Rnew®	5–60% bio-derived content
PA (PA 610, PA 1010)	Celanese	Zytel® RS	10–95% bio-derived content
PC	Covestro	Makrolon® RE*	60–71% bio-derived content
PC + ABS	Covestro	Bayblend® RE*	30–55% bio-derived content
PC + PET	Covestro	Makroblend® RE*	25–43% bio-derived content
PEBA	Arkema	Pebax® Rnew® Pebax® Clear	24–97% bio-derived content 90% bio-derived content
PHA	Danimer Scientific	Nodax® PHA	100% bio-derived content, is biodegradable
PLA	Danimer Scientific	Danimer Scientific PLA	100% bio-derived content, is industrial compostable
PPA	Celanese	Zytel® HTN	10–30% bio-derived content
TPC	Celanese	Hytrel® ECO B*	Up to 72% bio-derived content
TPE	Avient	reSound™ OM	40–50% bio-derived content

Biodegradable/Compostable: End of Life

- Biodegradable materials decompose in a natural environment
- Compostable materials can be broken down in an industrial composting facility or a home compost environment
- Sustainable Impact
 - Contribute to combatting the plastic waste problem
 - Require less energy to manufacture than traditional materials

Material	Supplier	Trade Name	Sustainable Benefit
PHA	Danimer Scientific	Nodax® PHA	100% bio-derived content, is biodegradable
PLA	Danimer Scientific	Danimer Scientific PLA	100% bio-derived content, is industrial compostable

*Requires ISCC+ certification to maintain mass balance credits



Recycled Content

Our sustainable solutions portfolio consists of a variety of recycled content materials, containing Post-Consumer Recycled Content (PCR) and Post-Industrial Recycled Content (PIR).

PCR is waste generated after a material is used by a consumer.

PIR is production surplus, or waste generated from the original manufacturing process.

Incorporating recycled content in new products reduces waste, yields lower carbon emissions, decreases reliance on percentage of fossil fuel-based materials, and contributes to the circular economy.

Material	Supplier	Trade Name	PCR/PIR	Sustainable Benefit
ABS	INEOS Styrolution	Terluran® ECO	PCR	50% or 70% post-consumer recycled content
Long Fiber Composites	Avient	Complēt™ REC	PCR/PIR	50–100% recycled content (both PCR and PIR)
MBS	INEOS Styrolution	Zylar® Ultra Black	PIR	Up to 54% recycled content
PA (PA 66)	Avient	Nymax™ PIR	PIR	20–100% post-industrial recycled nylon
PA (PA 66)	Celanese	Zytel ECO-R*	PIR	30% post-industrial recycled content
PA (PA 6, PA 66)	Nylene	Nylene®	PIR	Minimum of 25% recycled content
PC	Covestro	Makrolon® R	PCR/PIR	Up to 75% recycled content
PC + ABS	Covestro	Bayblend® R	PCR	10–35% post-consumer recycled content
PC + PET	Covestro	Makroblend® R	PCR	Up to 75% recycled content
PET	Celanese	Rynite® PCR*	PCR	Minimum of 30% post-consumer recycled PET
PP	GEON Performance Solutions	GEON® RESILIENCE® R	PIR	Up to 35% post-industrial recycled content
PP	LyondellBasell	Hostacom RE	PCR/PIR	Contains post-industrial or post-consumer recycled PP & TPO or 25% post-consumer recycled PP
PP	PureCycle	PureFive™	PCR/PIR	Natural polypropylene that is 100% purified recycled content
PP	RheTech	RheTech	PCR	100% post-consumer recycled content
PP	RheTech	RheVision	PIR	Minimum of 25% recycled content
TPE	Avient	reSound™ R	PCR	25–40% recycled content; post-consumer recycled content grade formulated with recycled ocean plastics
TPO (POE)	LyondellBasell	Hostacom RE	PCR/PIR	Contains post-industrial or post-consumer recycled PP & TEO; Percentage of recycled content may vary

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Efficient Consumption

Our solutions that support efficient consumption provide various sustainable benefits, including:

- Reduced cycle times
- Lightweighting
- Increased recycle rates
- Reduced VOC emissions

Material	Supplier	Trade Name	Sustainable Benefit
Additive	Avient	CESA™ BIO	Enhance the properties of bioplastics
Additive	DuPont	Siloxane	Reduce energy used for processing
Colorant	Avient	OnColor™ BIO	Created for use with bio-plastics such as PLA, PHA, PHBV, PBS, and PBAT
Compatibilizer	Dow	RETAIN™	Polymer modifiers that enable the recyclability of PE film structures that use EVOH or PA for the barrier layer
Foaming Agent	Avient	Hydrocerol™	Reduce part weight without compromising stiffness or mechanical properties
Long Fiber Composites	Avient	Complēt™ OnForce™	Provide lighter weight alternatives to steel (~80% lighter) and aluminum (~50% lighter)
PVC (Flexible)	GEON	GEON® Non-Phthalate	Non-phthalate formulations for risk-adverse applications
Specialty Formulations	Avient	Gravi-Tech™	Lead replacement technologies



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