

AMPACET



SUSTAINABLE MASTERBATCH SOLUTIONS & SERVICES

AMPACET



"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

GroHarlem Brundtland - Chairman of the EU Brundtland Commission on Sustainable Development (1992)

AMPACET

"Taking care of our planet is no longer a choice, but a responsibility that we embrace. We use fewer natural resources while we create higher performance and more sustainable products, solutions and services for our customers. These include some of the most successful and recognizable brands around the world.

We partner with our customers and suppliers in simple and efficient ways, which allows us to imagine and develop products that improve the quality of life of our employees, and our customers. At the same time this enables growth for a circular economy."


Alvaro Mendoza –Ampacet President & Chief Executive Officer



Introduction

The European Commission adopted the Circular Economy Action Plan (CEAP) in 2020. This plan includes specific targets on packaging and packaging wastes reduction, design for re-use and recyclability and simplification of packaging materials. This is driving to the transformation of the plastic and plastic packaging industry towards close-loops business models.

With “Environmental Care” as one Ampacet core value, Ampacet  sustainability program represents the company global commitment to sustainable development, offering a growing portfolio of innovative masterbatches benefiting customers, the industry and the planet.



Ampacet  masterbatch solutions support customers in achieving their sustainability objectives and voluntary commitments through improved product designs for circular economy, use of an optimized content of post-consumer recycled material, reduction of fossil-based raw materials consumption and adoption of alternative end-of-life scenarios.

In addition, Ampacet continuously improves its global manufacturing assets, increases sustainable raw materials and utilities sourcing and optimizes its distribution operations to reduce its impact on the environment.

Finally, Ampacet adopts United Nations’ Sustainable Development Goals to orient its own sustainability commitments, objectives and products & services offering throughout the plastic value chain.



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I. Ampacet solutions for improved designs for circular economy/recyclability

Recycling plastic packaging and articles in closed-loops allow to transform wastes into valuable raw materials. Recycled material replaces, fully or partially, virgin plastics when manufacturing new articles. It guarantees a long-term sustainable use of resources.

To achieve a circular economy business model and preserve end-product quality, plastic articles require a proper design to enable a repeated reuse of wastes as raw materials.

Ampacet offers a wide range of innovative masterbatches which allow product designers to optimize their plastic article and packaging so, when becoming a waste, they can go through every step of the recycling process (e.g. collection, sorting, reprocessing) generating qualitative post-consumer recycled materials for manufacturing new products.



Solutions for NIR detectability

Plastics recycling starts with the sorting of mixed plastic wastes into separate mono-material streams (e.g. PET, PE, PP, PS...) at plastic recovery facilities. The yield and quality of post-consumer recycled plastics for re-use into new plastic articles strongly depends on the efficiency of this sorting step.

Plastic separation by sensors is typically performed using Near-Infra Red (NIR) optical sorting reading the fingerprint of the polymer and classifying it into its corresponding stream.

The difficulties appear when dealing with dark plastic wastes; conventional black pigment, carbon black, does not allow NIR detection of the polymer. Such mixed plastics end in residual fraction, which will not be recycled but disposed mainly via incineration.

Ampacet offers alternative black and dark coloring solutions, to design colored plastic articles which can be sorted using conventional NIR optical technologies and effectively recycled, participating to the circular economy.

Some Ampacet coloring solutions received a positive technical advice from Cotrep (Center of resources and expertise on the recyclability of plastic household packaging in France).



REC-NIR-BLACK Portfolio

Description	Code	Carrier	Comments
REC-NIR-BLACK PE 374	1900374-E	PE	Grade with higher heat resistance & US FDA for extrusion thermoforming. With COTREP certification.
REC-NIR-BLACK PE 363	1900363-EA	PE	Low warpage with higher heat resistance & US FDA for IM and BM articles in PE. With COTREP certification.
REC-NIR-BLACK NIR PE 449	1900449-E	PE	Deep black NIR for PE IM and BM parts. With COTREP certification.
REC-NIR-BLACK PP 147	4900147-E	PP	Low warpage NIR-black with COTREP certification for PP IM and BM parts.
REC-NIR-BLACK COP 427	1900427-E	UNI*	Universal NIR-black designed for IM parts in polyolefins and polyamide.
REC-NIR-BLACK COP 441	1900441-E	UNI*	Universal Deep NIR-black for polyolefins applications.
REC-NIR-BLACK PS 039	6900039-E	PS	General purpose NIR-black for Polystyrene applications.
REC-NIR-BLACK SAN MB	6900087-E	SAN	NIR-black for ABS resin.
REC-NIR-BLACK PBT 118	7900118-E	PBT	NIR-black for ISBM application.
REC-NIR-BLACK PBT 135	7900135-E	PBT	Deep NIR-black for ISBM application. With COTREP certification.

*Universal carrier



NIR-sortable coloring masterbatch solutions

Ampacet is offering a wide range of NIR-sortable standard color masterbatches and, with its extensive experience and expertise in this field, develops any custom-made color with NIR detectability features.

Product Code	Description	RAL Code	Heat Resistance	Light Resistance
12116-A	Oyster Pearl		290	7
12110-A	Silver Grey Metallic	9023	290	7
12624	Harvest Gold	1036	290	7
132564	Lemon Yellow	1016, 1018	290	7
13633-BH	Buttercup Yellow	1018, 1023	260	7
13671-H	Egg Yolk Yellow	1021, 1023	260	7
130245	Sunglow Yellow	1018	240	7
1400320-E	Dark Orange	2000	240	7
141125	Sunrise Orange	2004	240	3
14304-BH	Tangerine Orange	2004	250	7
150844	Pillar Box Red	3020	240	3
15905-H	Orangy Red	3020	240	4
15947	Royal Red	3020, 3028	240	4
150166	Coral Red	3020, 3028	270	7
15936	Claret Red	3001	240	5
15853	Rose Pink	4003	240	5
15939	Lavendar Violet	4001, 4005	240	6
16058	Metallic Blue	5009	290	7
16057	Turquoise Blue	5021	290	7
1601011-E	Baby Blue	5012	290	7

Product Code	Description	RAL Code	Heat Resistance	Light Resistance
16000-A	Sea Blue	5012	280	7
161515-B	Royal Blue	5015, 5017	290	7
16900	Medium Blue	5005	280	7
16056	Sapphire Blue	5002	280	7
16059	Midnight Blue	5005	290	7
160287	Navy Blue	5013	240	6
17977-A	Translucent Green	6029	290	7
17856	Mint Green	6027	290	7
173937	Harlequin Green	6018	250	7
172121	Moss Green	6037	240	7
17873-AH	Pea Green	6037	260	7
172871	Jade Green	6024	240	6
17003-H	Lawn Green	6001	240	7
1700561-E	Forest Green	6001	260	7
13742	Light Ivory	1015	240	6
18874	Tan Brown	1001	240	7
18890	Desert Sand Beige	1011	250	7
18932-A	Terracotta Brown	8004	290	7
15194	Burgundy Red	3004	240	4
19912	Dawn Grey	7040	290	7

ReVive™ compatibilizers



While most mono-material (e.g. polyethylene, polypropylene...) packaging can easily be mechanically recycled, recycling multi-material packaging structures can present challenges.

Packing oxygen or moisture sensitive food products may require the use of various polymers in the packaging structure to provide gas barrier functionality, protecting packaged food, extending shelf life and reducing food wastes.

When recycling such multi-material packaging wastes, the disturbance of the polyolefin recycling stream by non-polyolefin components (e.g. Polyamide, EVOH...) must be minimized in order to ensure a level of quality of the recycle that allows upcycling into new packaging.

ReVive™ consists in a range of compatibilizing masterbatches. When incorporated in the packaging design stage, it enables recyclability of multi-material packaging wastes in quality film applications, providing an alternate end-of-life to landfill disposal.



Description	Code	Comments
ReVive 311 E	1000311-E	General purpose compatibilizer for PA, EVOH and PA/EVOH barrier polyolefin films.
ReVive 962 E	1000962-E	Especially designed for EVOH-barrier polyethylene and polypropylene films.

Biax4CE™ dedicated to bi-oriented polyethylene films

The bi-orientation of polyethylene to manufacture bi-oriented polyethylene (BOPE) films is an emerging technology, tending to allow replacement of non-polyethylene film substrates (e.g. BOPET, BOPA, BOPP, CPP...) in many laminates used for packaging applications.

The development of such new film types leads to new mono-material packaging films and generates higher quality post-consumer polyethylene recyclates.

Ampacet Biax4CE™ masterbatch portfolio includes additive as well as white masterbatches formulated to meet optimum quality and processing requirements for specific BOPE film structures.

Description	Code	Comments
BIAX4CE™ AB 1060	1001060-E	General purpose Antiblock & Medium COF.
BIAX4CE™ AB 1062	1001062-E	Excellent antiblocking performance & Medium COF.
BIAX4CE™ AB 1064	1001064-E	Good Antiblock & Low COF.
BIAX4CE™ AB 1115	1001115-E	Antiblock for excellent optics (low haze) & Medium COF.
BIAX4CE™ SLIP 1063	1001063-E	General purpose Slip.
BIAX4CE™ SLIP 1119	1001119-E	Permanent very low slip effect.
BIAX4CE™ AS 1117	1001117-E	General purpose Antistatic with long term effect.
BIAX4CE™ FRESH+ 1118	1001118-E	Fast and outstanding antifog performance.
BIAX4CE™ WHITE PE MB	11898-I	Premium quality 60% white for excellent whiteness & film opacity.

Laser Marking

Packaging design guidelines (Recyclclass, Ceflex...) recommend laser marking, as an alternate marking technique to ink printing, for simple mono-chrome marking like “best-before” dates, bar codes...

Ampacet LaserMark™ and LaserMarkFlex™ are antimony-free laser marking solutions enabling high contrast marking on clear and dark surfaces using NdYAG (1064 nm) laser technology.

Description	Code	Carrier	Comments
Laser Marking PE MB	1001074-E	PE	Cost effective antimony-free solution developed to achieve sharp dark markings on transparent or light colored plastic parts with an NdYAG laser (1064 nm) for rigid applications.
Laser Marking PE MB	1001088-E	PE	High contrast markings designed for complex projects featuring, offers a dark or clear markings according to the shade of the plastic part. For rigid applications.
LaserMarkFlex 1081	1001081-E	PE	Black/dark grey marking on flexible applications.
LaserMarkFlex 1135	1001135-E	PE	Lighter grey marking on flexible applications, offering broader food approval status (EC + FDA).



SAFARI White

PET bottles are generally opacified with high level of TiO₂(up to 14%) to protect dairy products like milk against photo-degradation. However, the increase of minerals in PET recycling stream affects recyclability. This is following fast-growing market introduction of opaque PET packaging. In order to minimize mineral content in recycled PET stream, french legislator has introduced a malus-tax on PET packaging containing more than 4% of mineral opacifiers.

Ampacet Safari technology has been designed to impart a high level of opacity (> 99.5%) to PET bottles while reducing mineral loading to less than 4% and support the circular design guidelines.

Description	Code	Carrier	Comments
SAFARI White PET MB	7100177-E	PBT	Premium off-white for PET, 70% loaded, +99.5% opacity with less than 4% TiO ₂ for dairy packaging.



ThermProtect™

In the Circular Economy polymers go through multiple extrusions. These repeated heatings lead to thermal degradation like color alteration (yellowing) and gel formation.

Ampacet ThermProtect solutions allow to stabilize the polymer of the plastic articles avoiding excessive thermal degradation during processing. Its use in the packaging design allow to preserve the quality of the derived post-consumer recyclate, enhancing the aesthetics of the articles it will be made of during the recycling loops.

Description	Code	Comments
ThermProtect PET 212-E	7000121-E	Heat stabilizers and antioxidants for PET. Preserves virgin PET and r-PET from thermal degradation and yellowing.
ThermProtect PET 119	7000119-E	Contains an additional additive to product 7000121-E which counteracts and reduces existing yellowness of the recycled resin.
ThermProtect PE 900	100900-E	High performance process stabilizer for PE offering great stability against gel formation and allowing a higher use of reprocessed materials.





Nucleating Agent

Brand owners and packaging producers tend to reduce packaging thickness in an attempt to reduce the amount of plastics used. Down-gauging can have consequences on the mechanical properties of the plastic article which becomes weaker.

Ampacet Nucleant has been designed for use in PP injection molded or thermoformed articles in order to improve not only the stiffness but also the clarity and transparency of the packaging, without any compromise on impact resistance.

Unlike mineral fillers, Ampacet Nucleant does not alter the packaging density preserving the sortability of the corresponding plastic packaging wastes by the sink-float separation technology during recycling operations.

Description	Code	Carrier	Comments
NUCLEANT PP MB	4000389-E	PP	Improved stiffness of Injection Molded and Extrusion Thermoformed polypropylene parts enables the downgauging of polypropylene plastic articles while keeping the same rigidity.



GASTOP-FLEX™

GASTOP-Flex™ masterbatch solutions are designed to reduce gas transmission rates in flexible applications and help product designers to optimise their packaging to meet circular economy requirements.

Adding GASTOP-Flex reduces both oxygen and water vapor transmission rates by up to 60% of the initial value. Ampacet GASTOP-Flex masterbatches allow manufacturing of high barrier packaging, keeping EVOH content below 5%, in compliance with circular economy design guidelines. They also enable down-gauging of general purpose packaging structures to reduce the weight of packaging, without affecting water vapor permeation.

Ampacet GASTOP-Flex is designed for use in monolayer as well as multi-layer general purpose and barrier polyethylene films on conventional as well as MDO (Machine Direction Orientation) stretching film equipment.

Description	Code	Carrier	Comments
GASTOP-FLEX 1131 A	1001131-EA	HDPE	Allow to reduce OTR and WVTR up to 60%. Designed for general purpose packaging as well as high barrier packaging allowing a reduction of EVOH content in compliance with most popular design guidelines for circular economy (e.g. EVOH < 5%).
GASTOP-FLEX 1293	1001293-E	LDPE	
GASTOP-FLEX 0411	4000411-E	PP Homo	

Foaming Agent

Reducing the quantity of plastic material in packaging and lightweighting of plastic parts have become a key sustainability trend over the years. A proven method for reducing part weight is the use of chemical foaming agents in the molding process.

Description	Code	Carrier	Comments
FOAM PE MB	103357	UNI*	Reduces packaging density. Prevents sink marks and reduces cycle times in injection molding process.
FOAM PE MB	1000423-E	UNI*	Provides finer cell formation.


*Universal carrier



II. Ampacet solutions to optimize Recycled Content

In order to close the loop of the circular economy, recycled plastics need to be reused into new plastic articles or packaging.

Within the scope of the European Circular Economy Action Plan (CEAP), the Circular Plastic Alliance (CPA) has a target to achieve an effective recycling of 10 million tons of plastic wastes by 2025. At the same time the Single-Use Plastic (SUP) Directive is imposing a minimum content of post-consumer recycled resins of 25% in PET beverage bottles by 2025 and of 30% in all beverage bottles by 2030. Large brand owners and converters voluntary committed up to 100% post-consumer recycled content in some of their packaging.

Ampacet is offering a wide range of innovative products and services within its  portfolio to support the plastic industry, brand-owners and customers to achieve and even surpass these targets. These masterbatch solutions off-set drawbacks of post-consumer recycled resins (e.g. smell, poor & inconsistent aesthetics, loss of mechanical properties...), allowing an optimized use of post-consumer recycled plastic material in new articles and packaging.



Color Design with Post-Consumer Recycled (PCR) resin

Ampacet develops colors for plastic parts and packaging containing up to 100% of post-consumer recycled resins (rPE, rPP, rPET, and rABS). Ampacet provides recommendations to ensure proper color consistency with post-consumer recycled resin and, depending on color, advises customers on all the aspects around PCR and pigments.

Recycled resin based Masterbatch

Ampacet provides standard and tailor-made masterbatches with pre and post-consumer* recycled resin as carrier to achieve 100% recycled content within the final article.

Description	Code	Carrier	Comments
White 1101204-E	1101204-E	PCR	General purpose 60% white masterbatch based on Post Consumer Recycled (PCR) polyethylene carrier resin system.

*ISO 14021



ReVive™ compatibilizers



Recycled resins is sometimes not made of a pure stream of plastic but consist in blends of various polymers (e.g. PE/PA, PP/EVOH, PE/PA/EVOH, PE/PP...). Such mix of resins may affect the mechanical properties and/or the aesthetics of the products when reused.

ReVive™ consists in a range of compatibilizing masterbatches which allow to homogenize the polymer mix, improving the mechanical properties and optics of the end article it is made of.

ReVive™ can be used either during the repelletizing step or when incorporating pre or post-consumer recyclates into the end product.



Description	Code	Comments
ReVive 311 E	1000311-E	General purpose compatibilizer for recyclates made of polar and a-polar polymer blends (e.g. PE, PP, PA, EVOH...).
ReVive 962 E	1000962-E	Compatibilizer for Polyolefin & EVOH blends, especially designed when good optical properties are required.
ReVive 324 E	4000324-E	Compatibilizer for mixed-polyolefin blends and recycling streams.

OdorClear™



Post-consumer recycled (PCR) polymers often show a strong smell due to the presence of contaminants (e.g. left-overs, inks...). Such smell limits the amount of PCR used for making new article or even prevent its use.

OdorClear™ range consists in powerful wide spectrum odor-absorbing masterbatches. It is designed for use with a broad range of recycled polymers. OdorClear™ minimizes odors and allows processors to improve their circular economy targets by boosting the PCR content.



Description	Code	Target Resin	Comments
OdorClear 0258	1000258-E	rPE, rPP	Odor absorbing additive designed to trap odors of post-consumer recycled material. Food approved solutions.
OdorClear 0333	4000333-E	rPP	
OdorClear 0102	7000102-E	rPET	
OdorClear 0021	2000021-E	rPBAT rPLA	
OdorClear 1222	1001222-E	rPE, rPP	Cost effective odor absorbing additive solution designed to trap odors of post-consumer recycled material. For polyolefin applications.

Blue Edge / Green Edge



Blue Edge counteracts the yellowish “dirty” effect of most reprocessed resins, improving the aesthetics of packaging made of post-consumer recycled plastics. It imparts a lighter bluish tone, for a clearer, fresher look to increase consumer appeal.

This technology is available in a number of shades such as green, amber, fuchsia and more.



REDUCE
REUSE
RECYCLE

Description	Code	Comments
Blue Edge PET 24	7000024-E	Blue Edge 24 counteracts the yellowish “dirty” effect of post-consumer recycled PET. Enhances the bottle brightness.
Blue Edge PET 78	7600078-E	Blue Edge 78 counteracts the yellowish “dirty” effect of post-consumer recycled PET. Enhances the bottle brightness with a lighter bluish tone.
Blue Edge PE 226	7600078-E	Blue Edge 226 counteracts the yellowish “dirty” effect of post-consumer recycled PE. Enhances film brightness with a lighter bluish tone. Reduces the risk of additional gel formation.
Green Edge PET 288	7700288-E	Green Edge counteracts the yellowish “dirty” effect of post-consumer recycled PET. Enhances the bottle brightness with a lighter greenish tone.

REC-O-BLACK

Optimizing the plastic article recycled content can be achieved via the addition of recycled plastics and recycled pigments.

Ampacet REC-O-BLACK Black Masterbatch is based on RECYCLED and RECOVERED post-consumer feedstocks helping to reduce carbon foot-print & use of fossil fuel derived raw materials. The black pigment is recovered from post-consumer rubber products.

However this solution is not NIR detectable.



Description	Code	Carrier	Comments
REC-O-BLACK 216	1900216-E	PE	Sustainable Black grade composed of 95+ % recycled and recovered post-consumer feedstock (carbon black and carrier resin). Not suited for food contact applications.

ThermProtect™

Ampacet ThermProtect™ solutions allow to stabilize commercial recycled polymers (e.g. rPET, rPE...) avoiding further thermal degradation and yellowing of the recycled resins during multiple reprocessing. Its use will enhance the aesthetics of the end articles, allowing to increase the recycled content.

Description	Code	Comments
ThermProtect PET 212-E	7000121-E	Heat stabilizers and antioxidants for PET. Preserves virgin PET and r-PET from thermal degradation and yellowing.
ThermProtect PET 119	7000119-E	Contains an additional additive to product 7000121-E which counteracts and reduces existing yellowness of the recycled resin.
ThermProtect PE 900	100900-E	High performance process stabilizer for PE offering great stability against gel formation and allowing a higher use of reprocessed materials.



Desiccant

Post-consumer resins sometimes contain a high level of moisture. This leads to processability and aesthetic issues when used into new articles.

Ampacet desiccant masterbatches capture moisture and keep it trapped inside the polymer, preventing occurrence of related problems.

Code	Carrier	Comments
103450-A	PE	Desiccant masterbatch for use with recycled materials to minimize problems linked to high moisture content.
101400-B	PE	Food grade desiccant masterbatch.

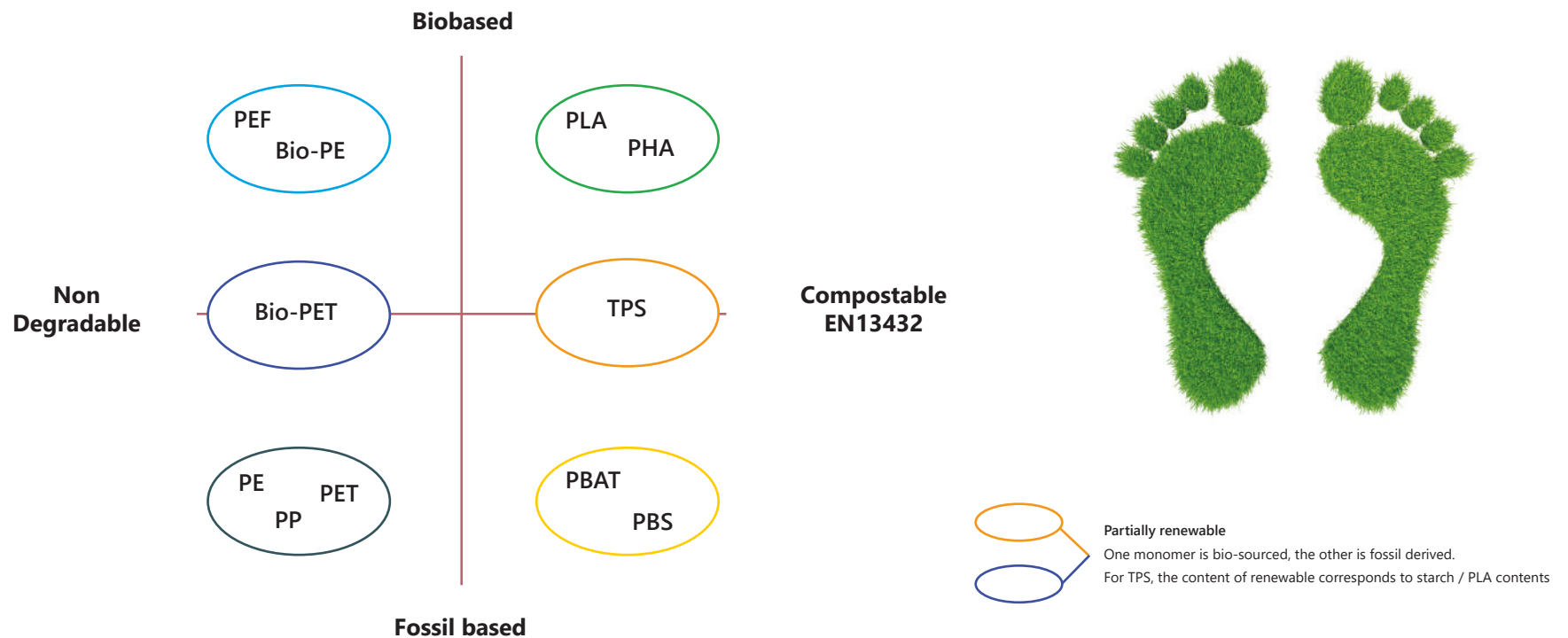


III. Bioplastic

“Bioplastics” can be categorized into different classes of polymers in function of their origin-of-life and end-of-life:

- Biobased plastics made from renewable feed-stocks, reducing dependency on limited fossil resources
- Compostable (Biodegradable) plastics which get decomposed by the action of living organisms, usually bacteria, turning back to elementary carbon and hydrogen. Compostability of polymers can be tested using norm EN13432.

Classification of a few biopolymers (Bio-PE, PLA, PHA, TPS...) & conventional polymers (PE, PP, PET) can be illustrated as follows:



BioRange+

Ampacet BioRange+ portfolio consists in white, black and color as well as additive masterbatches which are certified following **TUV OK Compost INDUSTRIAL** certification scheme. They are designed for use with Starch/PBAT/PLA blends or PLA based compostable end-products.

Besides the standard range, Ampacet offers custom-made solutions.



Description	Code	Target Resin	Comments
BioRange+ BIOFILL 013	2000013-E	Starch/PBAT/PLA blends	Filler.
BioRange+ White Bio MB	2100006-E	Starch/PBAT/PLA blends	70% TiO ₂ White.
BioRange+ Red Bio MB	2500017-E	Starch/PBAT/PLA blends	Red.
BioRange+ Blue Bio MB	2600009-E	Starch/PBAT/PLA blends	Blue.
BioRange+ Green Bio MB	2700008-E	Starch/PBAT/PLA blends	Green.
BioRange+ Yellow Bio MB	2300013-E	Starch/PBAT/PLA blends	Yellow.
BioRange+ Brown Bio MB	2800002-E	Starch/PBAT/PLA blends	Brown.
BioRange+ Black Bio MB	2900007-E	Starch/PBAT/PLA blends	35% N200 Black, suitable for mulch film.
BioRange+ AB Bio MB	2000025-E	Starch/PBAT/PLA blends	Antiblock.
BioRange+ White PLA MB	2100004-E	PLA	White.
BioRange+ AB PLA MB	2000026-E	PLA	Antiblock.

BioRange+ Home

BioRange+ HOME portfolio consists in white and color masterbatches, certified following **TUV OK Compost HOME** certification scheme. They are designed for use with home compostable blends (e.g. Starch/PBAT...) to manufacture end-products which will end their lives in domestic composting units.



Besides the standard range, Ampacet offers custom-made solutions.

Description	Code	Target Resin	Comments
BIORANGE+ HOME WHITE MB	2100027-E	Home Compostable blends	70% TiO2 White.
BIORANGE+ HOME BLUE MB	2600031-E	Home Compostable blends	Blue.
BIORANGE+ HOME GREEN MB	2700038-E	Home Compostable blends	Green.



BioRange+ BlowPLA

Blowing a PLA or PLA-rich film presents challenges such as a high generation of noise in the production hall and poor quality of film at the winder (e.g. wrinkles).


Ampacet BioRange+ BlowPLA is a masterbatch solution which allows to blow a PLA or PLA-rich film on conventional polyethylene blown film equipment with good processability. It contributes to minimizing noise during extrusion of the bubble and suppressing folds/wrinkles in the film.

BioRange+ BlowPLA masterbatch is certified following **TUV OK Compost INDUSTRIAL** certification scheme.



Description	Code	Target Resin	Comments
BioRange+ BlowPLA MB	2000010-E	PLA & PLA-rich blends	Aid for processing PLA on conventional blown film equipment.



A photograph of two children running through a field of tall grass at sunset. The sky is a warm, golden orange, and the sun is low on the horizon, creating a silhouette effect on the children. One child is holding a string attached to a large, diamond-shaped kite that is flying in the air. The kite has a dark frame and a light-colored sail. The overall mood is peaceful and nostalgic.

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