MIXCYCLING®

ORGANIC MATERIAL BLENDS

sustainability doc.

Version 1.0 - December 2019

Mixcycling®
Sustainability & Eco-design

The majority of plastics ends up as mixed waste (not-recyclable) or, at the worst, dispersals in the environment.
Circular Bio-economy is an outcome of a synergy between Production Chains, Regulators, Business Communities and Consumers.

Let's approach the issue all around:

Reduce
We prevent waste through less consumption of plastic, better material efficiency, product innovations and material choices.

Reuse
We re-introduce organic scraps coming from industrial productions, giving them a new life. We also choose recycled plastic when the application allows it.

Recycling & Biodegradability
We re-introduce organic scraps coming from industrial productions, giving them a new life. We also choose recycled plastic when the application allows it.

Energy Recovery
Mixcycling® blends can be used for energy recover which is at least partly bio-based, or fully bio-based when bio-based polymers have been used.

Dispersion Risks
We are committed promoting a responsible use of our blends in order to reach the Zero waste target in the next future. But, even in the worst option, in case of dispersion on the environment, plastic contamination is up to 80% lower with Mixcycling® blends thanks to its organic waste component, when compared with fossil or non-naturally degrading plastics.

Mixcycling®
Sustainabile Landmarks

Less Energy

reduction of energy intensive processes

Less Resources

reduction of the consumption of non-renewable or limited resources

Less Pollution

reduction of polluting emissions

Less Impact

reduction of end-of-life environmental impact

Mixcycling®
LCA - Life Cycle Assessment

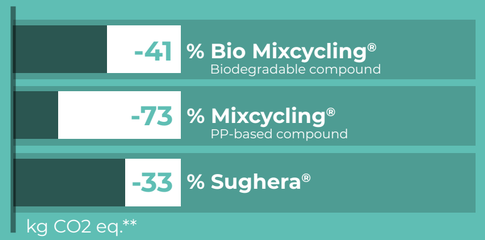
LCA, Life-Cycle Assessment, is an analysis to assess environmental impacts associated with all the stages of a product's life (from raw material extraction through material processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling).

LCA is helpful for either designing sustainable products or implementing any decision-making process during product's production in order to reduce the environmental impact.

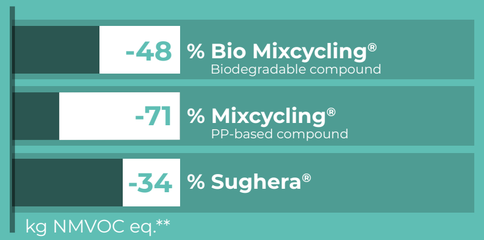
Mixcycling®'s LCA in sum:

Compared to the virgin polymers*:

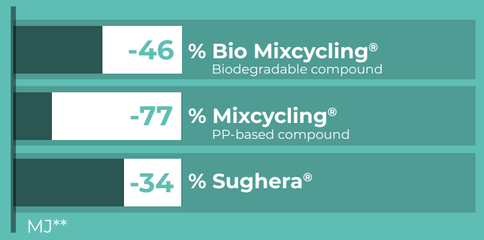
Carbon Footprint



Photochemical Oxidants



Non-Renewable Resources Depletion



The Mixcycling® blends have a reduced environmental impact measured by LCA - Life Cycle Assessment with indicators such as Carbon Footprint, Photochemical Oxidant Formation and Abiotic Depletion, sign of an intelligent and concretely sustainable solution. The use of organic waste as Secondary Raw Materials through Mixcycling® brings an advantage in reducing the environmental impact, depending on the amount of organic waste used.

* Only three of all five Impact Categories are shown by comparing organic Mixcycling® blends with the corresponding Mixcycling® 100% virgin raw materials (in equal conditions).
** the system boundairies analyzed are cradle to gate.

LCA study provided by LCA-lab Srl submitted to Critical Review

LCALAB
LIFE CYCLE CONSULTANTS

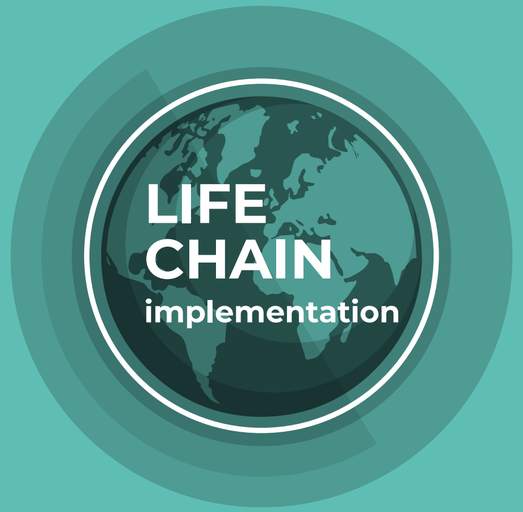
Mixcycling®
Sustainability map

Blends	Performance	Purpose	End life Disposal	End life Cycle	Sustainable advantages
Mixcycling® blends Biodegradable	Biodegradable Suitable for food contact*	Products design to have a defined medium-short life. Certifiable OK compost**.	- Compostable if certified OK-compost - Separate waste collection if not certified	- Recyclable**** - Compost - Landfill	**RESOURCES** - more than 90% bio based **LCA**** - halved around 50% compared to virgin biodegradable plastic **RECYCLABILITY** - 100% recyclable in a closed-loop cycle **ENERGY RECOVER** - reduced energy consumption for their production **ENVIRONMENT** - plastic contamination reduced up to 80% if dispersed
Mixcycling® blends 100% Recycled Not biodegradable	Resistant and long-lasting Not suitable for food contact*	Long lasting products design to have a long life	Plastic collection	- Recyclable**** - Energy recover - Landfill	**RESOURCES** - from 20% to 80% less platic - 100% recycled blend **RECYCLABILITY** - 100% recyclable in a closed-loop cycle **ENERGY RECOVER** - reduced energy consumption for their production **ENVIRONMENT** - plastic contamination reduced up to 80% if dispersed
Mixcycling® blends Not biodegradable	Resistant and long-lasting Suitable for food contact*	Long lasting products design to have a long life	Plastic collection	- Recyclable**** - Energy recover - Landfill	**RESOURCES** - from 20% to 80% less platic **LCA**** - drastically reduced, more than 70% less compared to virgin plastic **RECYCLABILITY** - 100% recyclable in a closed-loop cycle **ENERGY RECOVER** - reduced energy consumption for their production **ENVIRONMENT** - plastic contamination reduced up to 80% if dispersed

* Food Contact suitability has to be tested on conditions and substances required for the final product
** The final product must be certified OK compost to be disposed into compostable collection.
*** LCA values are calculated on selected blends and under specific scenarios.
**** All Mixcycling® blends are 100% recyclable in a closed-loop cycle, in other cycles according to organic charge percentage, disposal and plants.

Mixcycling®
the next sustainable steps

The Mixcycling® vision in 3 concrete objectives to design a better future:



We are constantly working on the whole life chain of Mixcycling®.

From the creation of the materials, towards the transformation processing, till its end of lifes in order to improve our blends in terms of sustainablility and technical performance.

Looking for a future without plastic contamination thanks to Mixcycling®.

Plastic dispersal is one of the main causes of pollution. We are then committed to explore and support solutions against this critical issue.

Committed to reach the target ZERO impact with Mixcycling®.

Micycling® was born from the idea of giving a second life to a waste, to make it still useful. Following the same spirit we aim to achieve the goal of zero impact for our blends.

THANK YOU

LIVINGCAP

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