



BIOTRANSFORMATION

“ The world’s first biodegradation technology capable of delivering full biological conversion of polyolefin packaging materials in the open environment ”



CONTENTS

01 Context:
A Global Issue

02 Solution:
Biotransformation

03 Success Stories:
Global Roll-Out

04 Added Value:
H2H Marketing

05 Next Steps:
Brand Experience



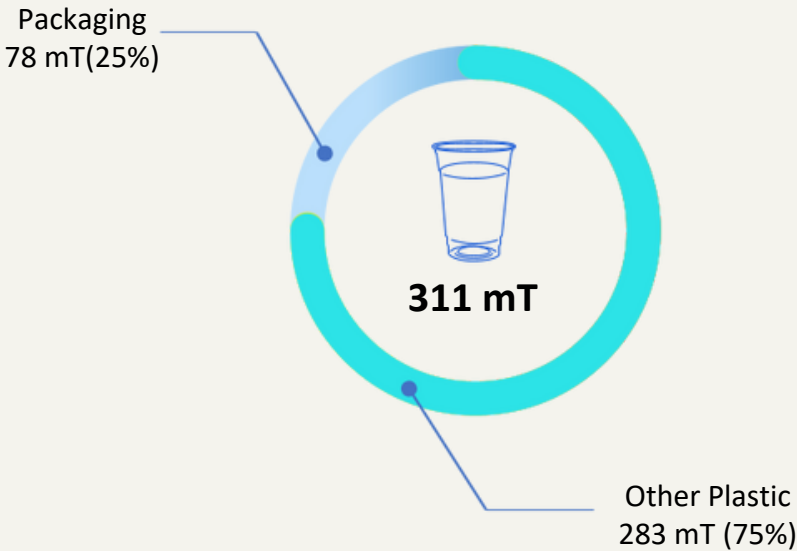


Context:

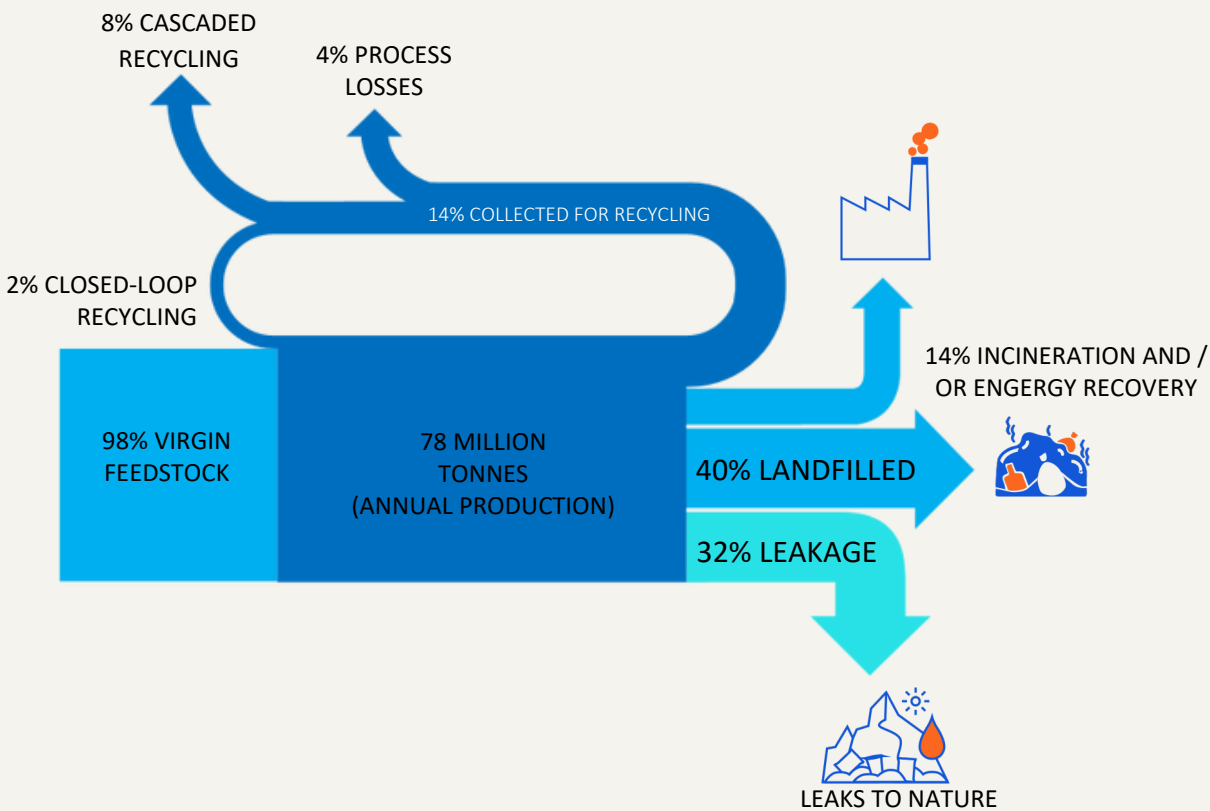
A GLOBAL ISSUE

PLASTIC POLLUTION –A GLOBAL MATERIAL FLOW CHALLENGE

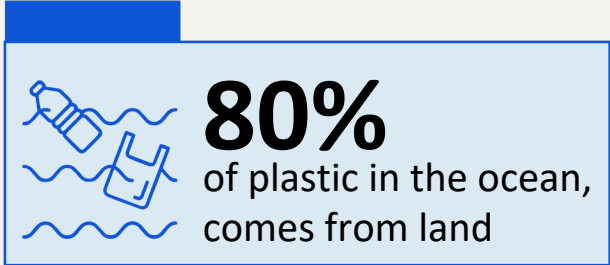
Global Plastic Production



Global Plastic Packaging Material Flow



PLASTIC POLLUTION –REGIONAL CONCERN

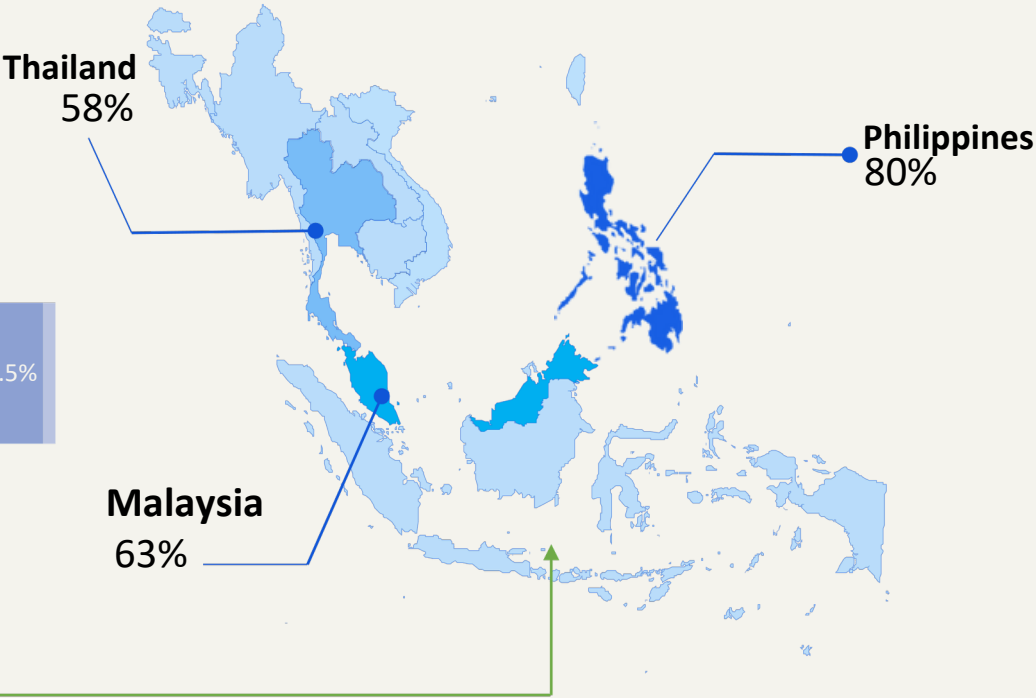


APAC	81%
AFRICA.	8%
S. AMERICA	5.5%
N. AMERICA	4.5%
EU & OCEANIA.	<1%

SPLIT OF OCEAN PLASTICS



Leaked plastics

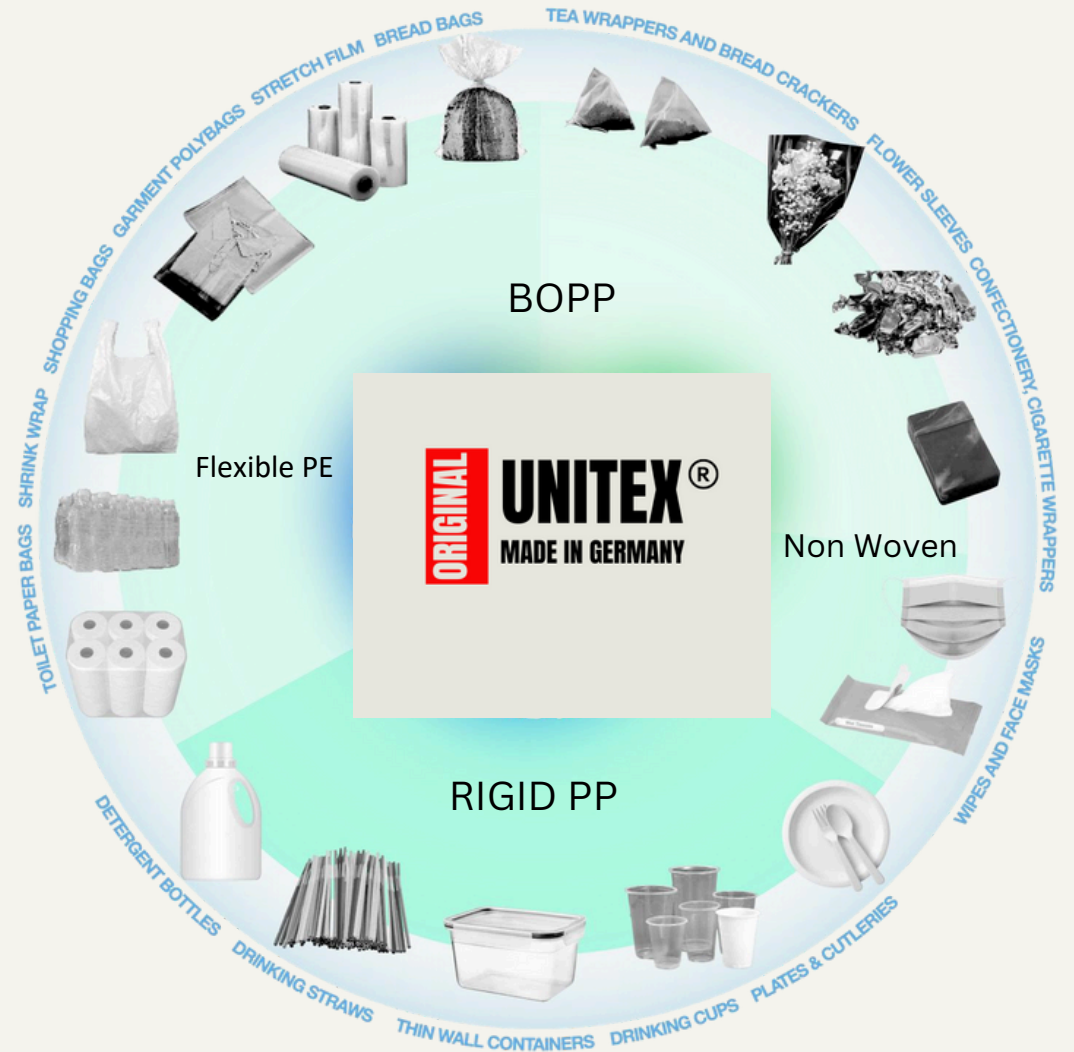




Solution: **BIOTRANSFORMATION**

OUR SOLUTION

**World's first
biodegradation
technology capable
of delivering full
biological conversion
on PP & PE materials**



OUR TECH IN A NUTSHELL



OFFERS 2 END OF LIFE SCENARIOS

Time controlled process to allow optimal use phase and recycling recovery, if recycling option is available.



TRANSFORMS PLASTIC INTO WAX

Transforms PP & PE materials into a bioavailable wax which naturally occurring microorganisms can easily assimilate.



ENSURES SAFE RETURN TO NATURE

No microplastics² or toxic substances are left behind post-Consumption stage.



BACKED BY INDEPENDENT LABS

Tested & certified to international biodegradability standard (BSI PAS 9017)³ underpinned by EN, ASTM and ISO standards (ASTM D5988/ISO 17556)



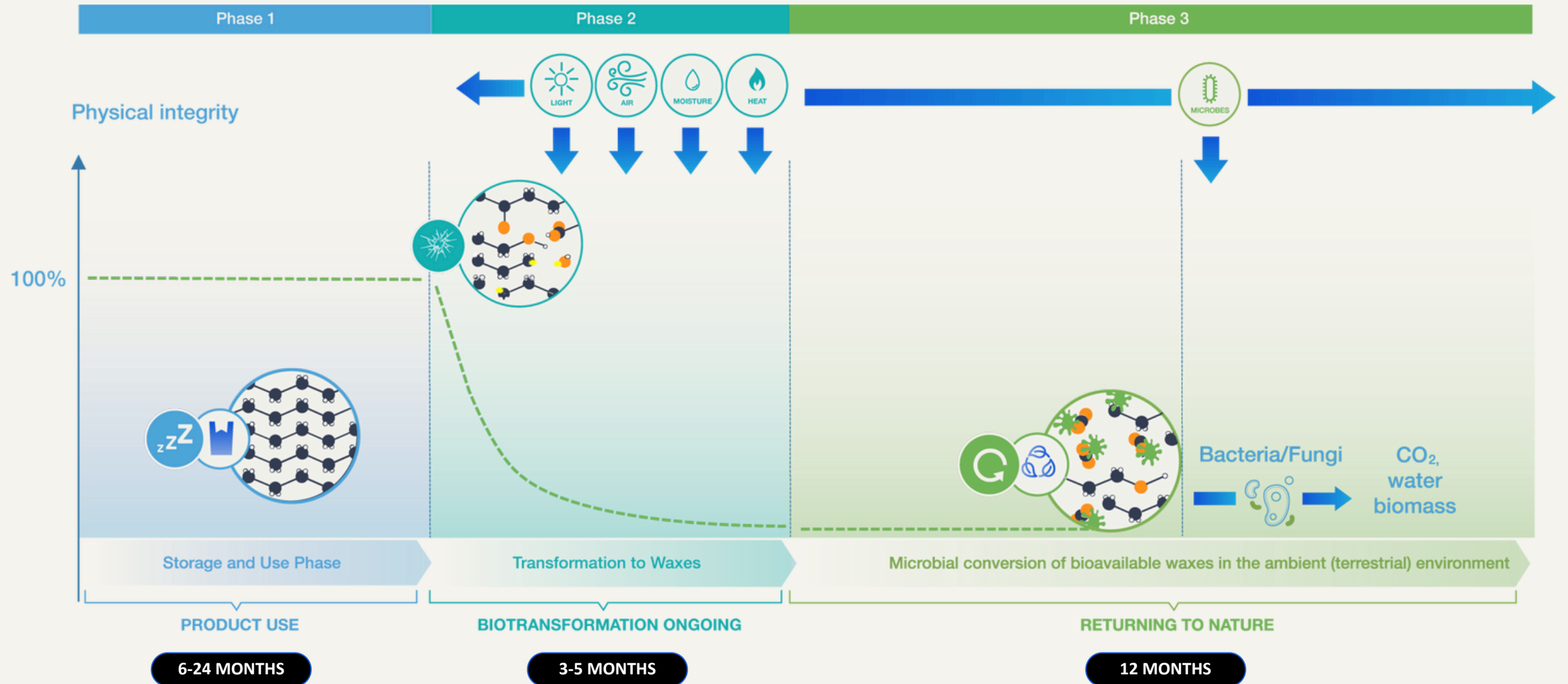
ALLOWS IMMEDIATE SCALABILITY

Integrated at the point of resin and packaging manufacturing to ensure seamless integrations.

OFFERS 2 END-OF-LIFE SCENARIOS

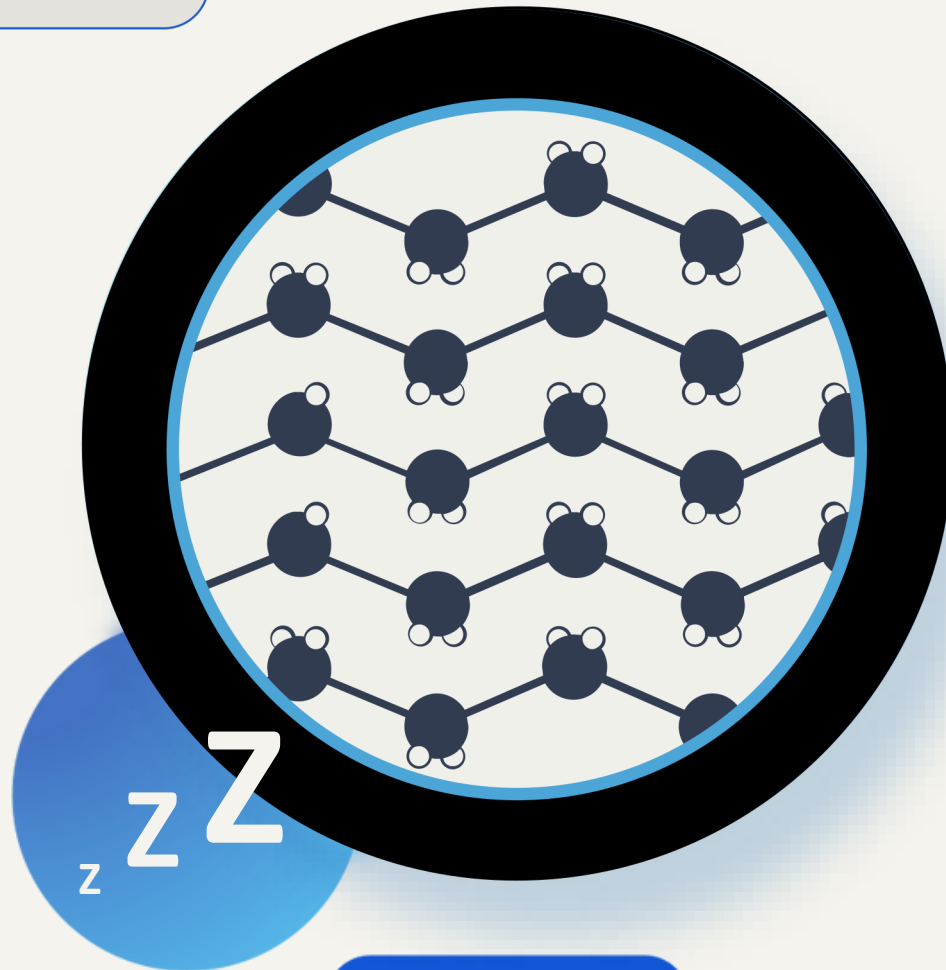


TRANSFORMATION OF PLASTICS INTO BIOAVAILABLE WAX



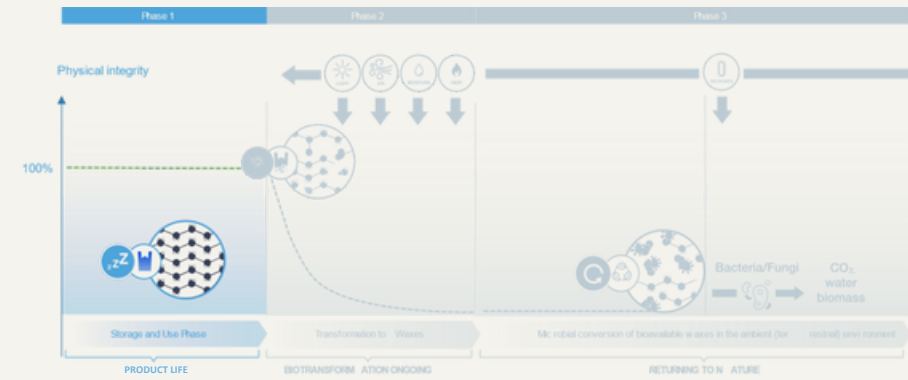
BIOTRANSFORMATION-STAGE 1

SERVICE LIFE



6-24 MONTHS

storage and use phase

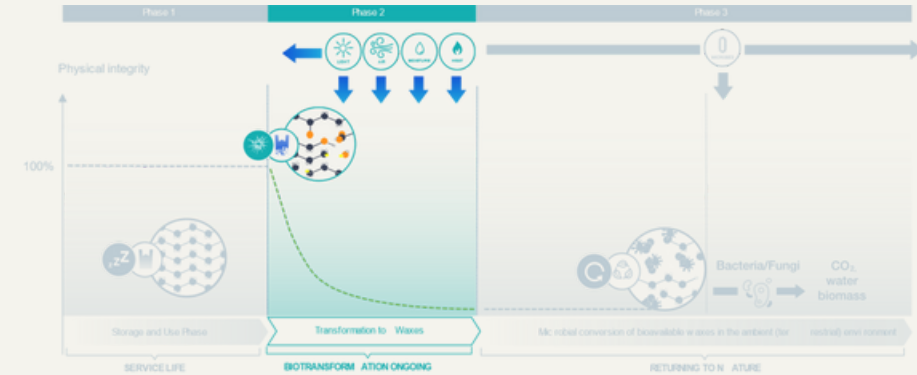
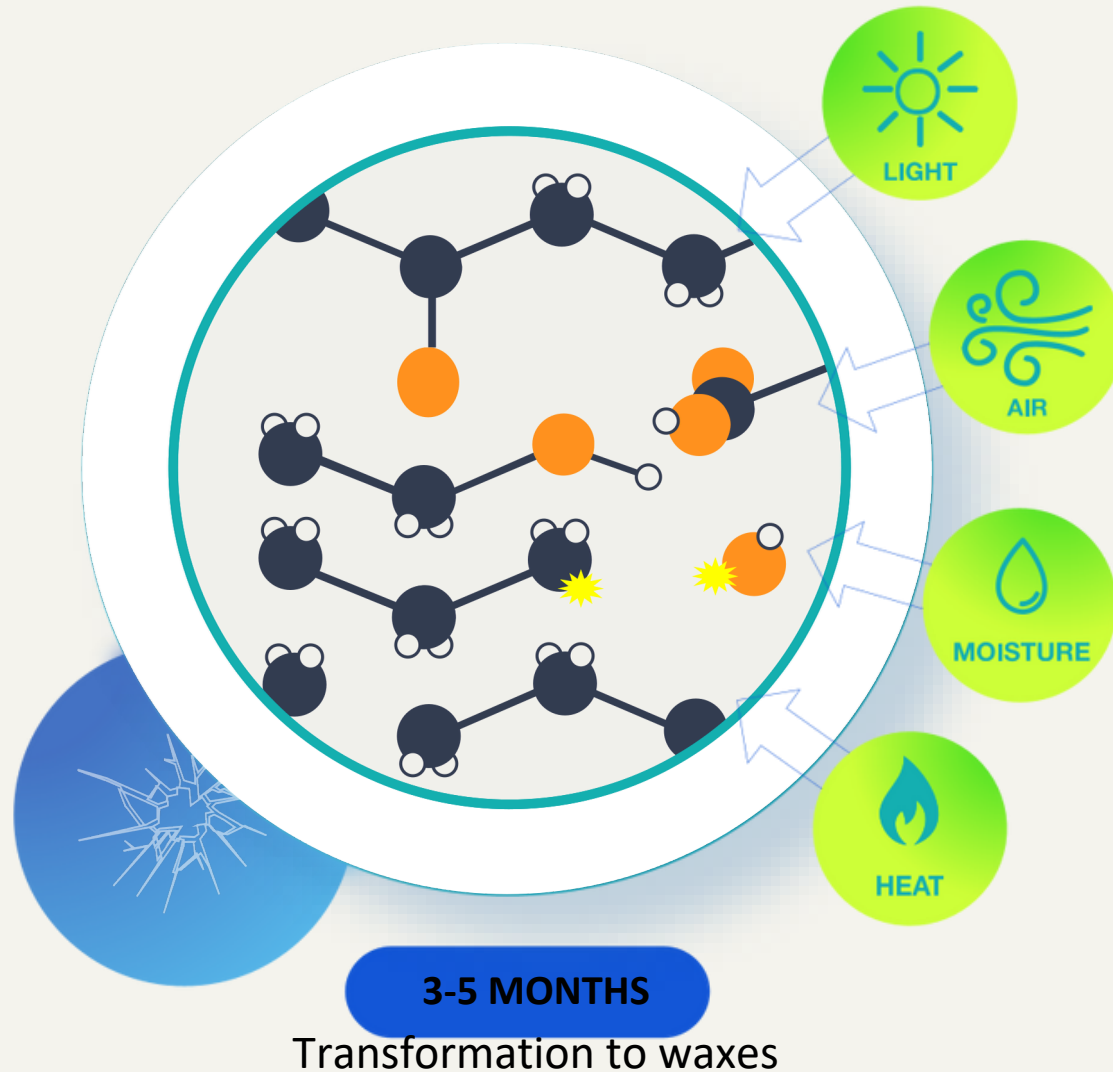


During the storage and use phase the technology is inactive. The packaging behaves the same way as its non-degradable conventional correspondents.

CRITERIAS:

- | | |
|-------------------------|-----------------------|
| ✓ Mechanical Properties | ✓ Functional benefits |
| ✓ Product performance | ✓ Recyclability |

BIOTRANSFORMATION-STAGE 2



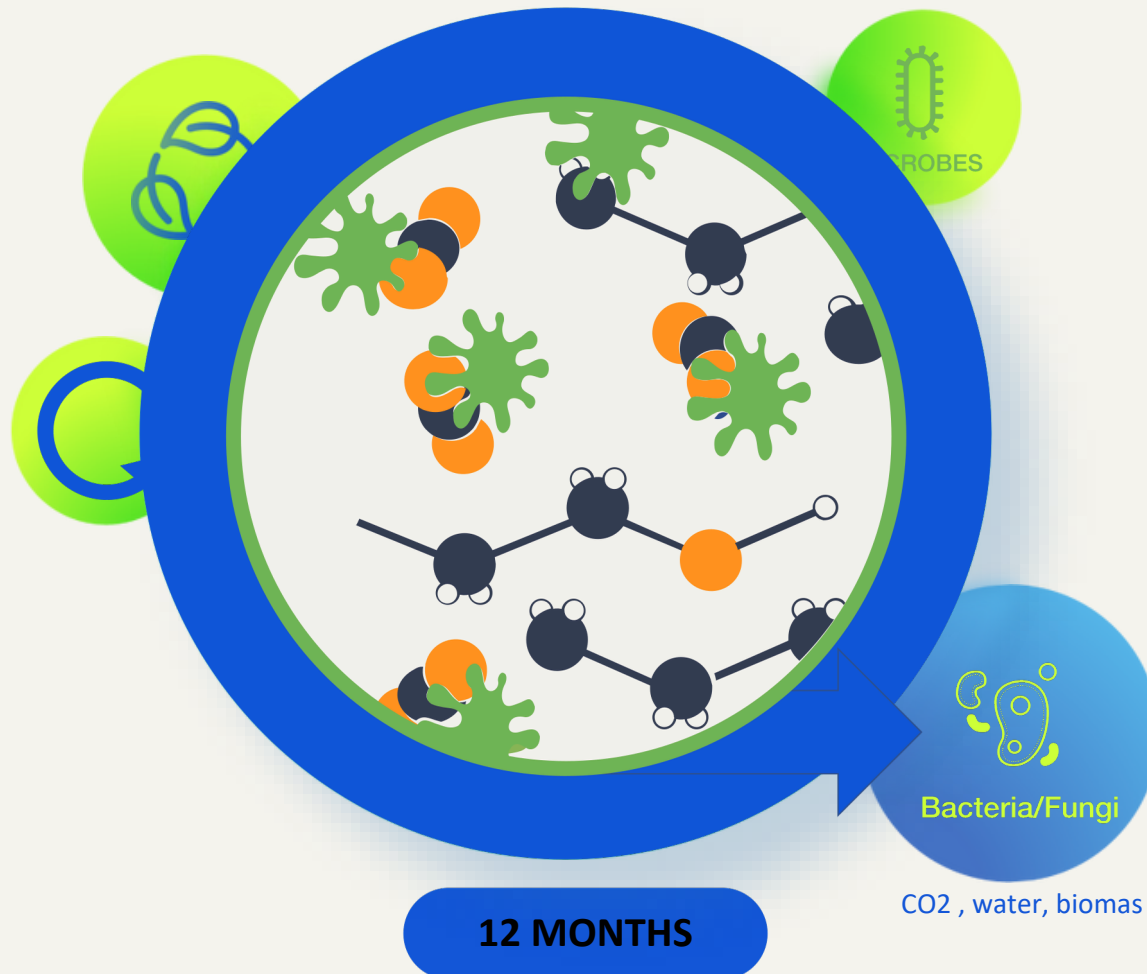
If leaked into the open-air land-based environment, the prolonged exposure to various environmental stimuli will trigger a rapid chemical transformation to wax.

CRITERIAS:

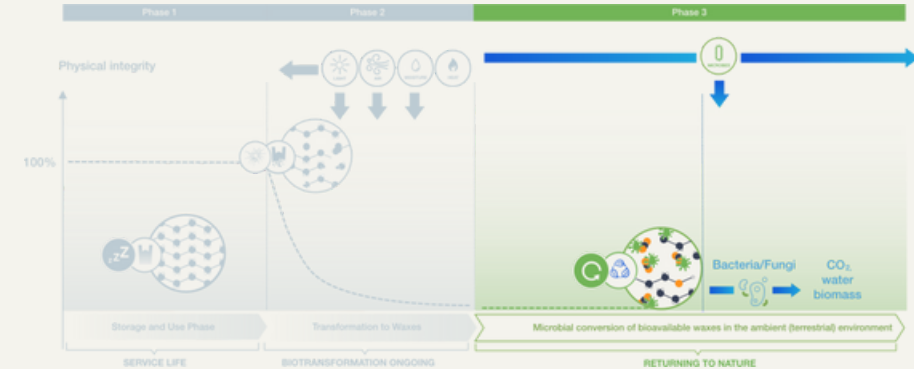
- ✓ Low molecular weight
- ✓ High carbonyl index

BIOTRANSFORMATION-STAGE 3

RETURNING TO NATURE



Microbial conversion of bioavailable waxes in the ambient (terrestrial) environment

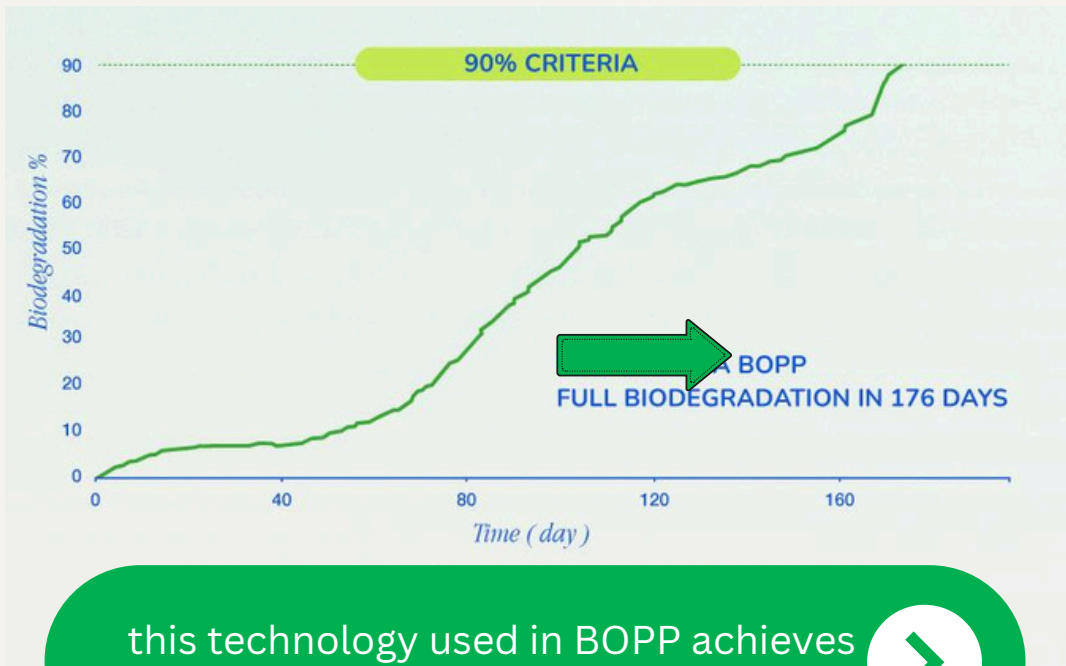


The bioavailable wax is biologically transformed through mineralization by naturally occurring bacteria and fungi in soil and under mesophilic/ambient temperature conditions.

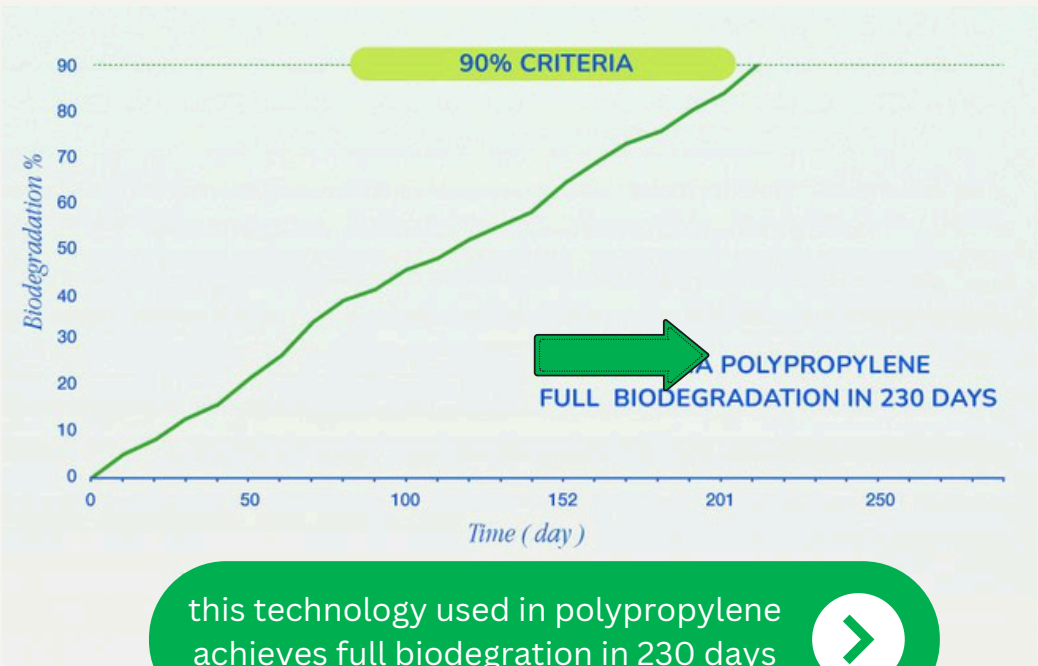
CRITERIA:

- ✓ Wax Fully Assimilated
- ✓ No Toxins left in The environment
- ✓ No Microplastics

BACKED BY INDEPENDENT LABS



this technology used in BOPP achieves full biodegradation in 176 days



this technology used in polypropylene achieves full biodegradation in 230 days

CRITERIA:

- ✓ REAL WORLD CONDITIONS
- ✓ TESTED IN DIFFERENT CLIMATES
- ✓ VERIFIED BY INDEPENDENT SCIENTISTS