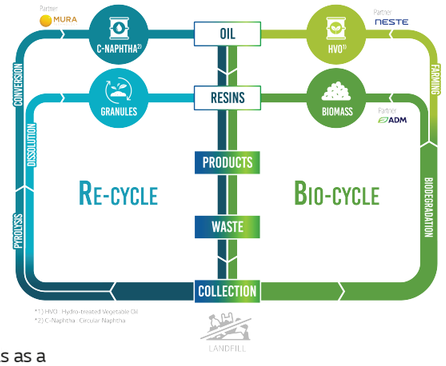
Bridging for Circularity

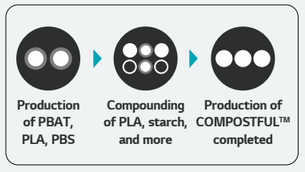
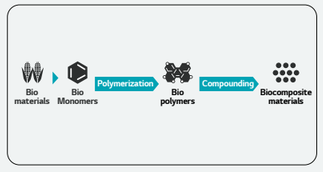
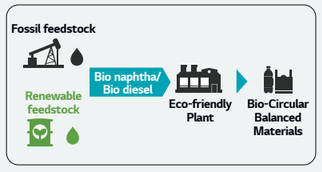
Sustainability is one of our core values.
We are committed to practicing environmental sustainability and working for a better future through our journey towards Net Zero.

We pursue sustainable innovation based on Compostable, Bio, Recycled materials as a Total Solution Provider and The Circular Loop symbolizes our sustainability business model.



Circular Loop

LETZero Portfolio (Bio)

	Compostable (Certified)	Bio-based	Bio-Circular balanced (Mass Balance Approach)
Description	**Certified compostable materials** that decompose into water and carbon dioxide over period months under controlled conditions, effectively reducing plastic waste.	**Bio-based materials** derived by corn starch and sugarcane with less carbon emissions.	**Bio-Circular balanced materials,** incorporating bio-renewable feedstoc extracted from plant-based oils with fossil-based oil, adding the benefit of less carbon emission.
	 Materials : COMPOSTFUL™, PLH[1]	 Materials : PLA, Bio-PA	 Materials : Bio-balanced SAP, ABS, PE, PVC etc.
Main Features	• Tailored solution for customer's needs • Predictive modeling of biodegradation • In-house test capabilities • Reliable supply and consistent Quality	• Strategic partnership with ADM • Collaboration with Key players BioWorks • High-quality Functional Materials	• The ISCC Plus certification about 60 • Strategic partnership with MURA NESTE • Utilizing the same existing petrochemical infrastructure

*1: PolyLactate-co-Hydracrylate

Sustainability Business Plan

	2022	2023	2024	2025	2026	2027
COMPOSTFUL™		Pilot (1 KTA)	Commercial (50 KTA)			
PLA	Partnership with ADM	Partnership with BioWorks		Pilot (1 KTA)	Commercial (50 KTA)	
Bio-PA	Partnership with Biomaterial Company		Pilot (1 KTA)			Commercial (25 KTA)

Go Beyond Materials

COMPOSTFUL™

LG Chem's Compostable material solution

COMPOSTFUL™ SF1000

Item	Test Method	Unit	Typical Value
Resin Properties			
Density	ASTM D1505	g/cm³	1.0 - 1.25
Melt Index (190℃/2.16kg)	ASTM D1238	g/10min	2.5 - 4.5
Shore D Hardness	ASTM D2240	-	32
Melting point	LG Method(DSC)	℃	110 - 125
Resin Properties			
Tensile strength at Break MD/TD	ASTM D882	kg/cm²	400 / 400
Elongation at Beak MD/TD	ASTM D882	%	550 / 650
Dart Impact Strength	ASTM D1709B	g	400
Haze	ASTM D1003	%	15

1) Film properties are measured on 50㎛ film specimen*, and properties may vary depending on processing equipment & conditions. *B.U.R : 2.5, Processing temperature : 160℃
2) The data in this table are typical values, and not guaranteed specification

Reliability
Our integrated raw materials (PBAT, PLA etc.) that allow for high quality and steady supply

Pre-Verification
Assess critical issues and conduct simulations to fulfill customer needs.

Predictability
Modeling system quickly predicts biodegradability, enhancing certification success rates

Certification
Industrial compost certificates and food contact materials compliance from Europe, China and Korea

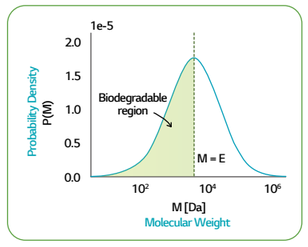
Variety
Offers various grades that meet customer needs, applicable across extensive applications.

COMPOSTFUL™ SF1000

*Undergoing testing for Home compostable certification

Predictive Modeling of Biodegradation

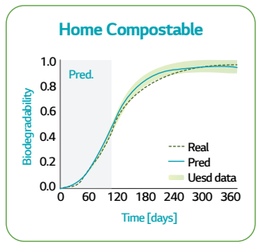
By determining the parameters associated with each phenomenon, we elucidated the individual impacts of the factors on biodegradation curves.
The model provides a solid foundation for the biodegradation modelling of more complex polymers, such as blended polymers developed by LG Chem.

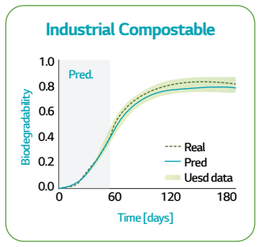


Key Factors of chemical kinetic's model

(a) Non-degradability of polymers with large masses
(b) Polymer hydrolysis
(c) Polymer scission processes
(d) Microbial mineralization

$$F(\epsilon) = p(M \le \epsilon) = \int_0^{\epsilon} p(M)dM$$

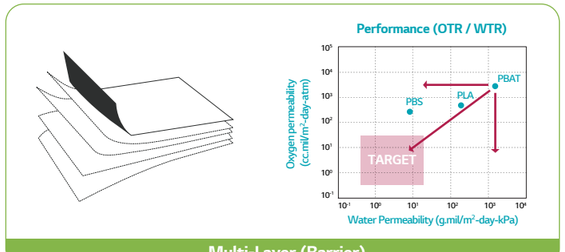




Applications

Produce Bag

Mulch Film



Multi-Layer (Barrier)

LG Chem

LETZer

Leading with Science for Sustainability

As a global company that has an influence on the global environment,
we have the social responsibility to create values that contribute to a sustainable future
with our vision 'We connect science to life for a better future'