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 ecoseed

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LOTTE Chemical is initiating its moves towards a sustainable circular economy, where used plastic turn into resources.

Through ceaseless research and investments in manufacturing process, LOTTE Chemical accelerates towards a greener and better tomorrow.

# SEEDS FOR TOMORROW

## 1 SEEDS FOR RESOURCE CIRCULATION

ECOSEED, which stands for ECOLOGICAL SEED, is an integrated brand of sustainable plastic materials.

With eco-friendly recycling technology and customer-tailored solutions, ECOSEED leads the way in sustainable plastic resource circulation, positioning as the “new generation plastic material”.

## 2 BORN TO BE RECYCLED

ECOSEED offers a high performance compound executions within sustainable plastics; including PCR materials, bio-PET materials for carbon reduction.

For a sustainable earth, sustainable tomorrow, ECOSEED is initiating its moves towards circular economy.

## 3 CIRCULAR ECONOMY FOR PLASTICS

ECOSEED pursues practical plastic resource circulation and leads changes towards a sustainable future in industrial materials.

### ECOSEED LOGO DESIGN



- The objective is to create a B.I. which symbolizes the circular economy and highlight its originality, through a combination of an infinite symbol ( $\infty$ ) with the initial alphabet of ECOSEED, “e”, visualizing the shape of a seed.

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**For a sustainable earth  
and sustainable tomorrow,  
LOTTE Chemical is taking its initiative:**

We create a circular economy for plastics,  
which connects and discovers resources, the earth,  
and the endless possibilities, towards better tomorrow.

**Seed** for Possibilities  
for Innovations  
for Changes

# LOTTE Chemical accelerates towards a greener and better tomorrow through a circular economy for sustainable plastics.



## OUR STRENGTHS



POINT 1

**CONSISTED WITH  
HIGH QUALITY  
PRODUCTS**

ECOSEED is consisted with a wide range of sustainable plastic, commonly used in daily life such as PET, ABS, PC, PP, PE, etc.



POINT 2

**ENSURING ECO-FRIENDLY  
RECYCLING TECHNOLOGY**

LOTTE Chemical ensures eco-friendly recycling capabilities, such as the first pyrolysis naphtha product, the largest-chemical recycling PET plant conversion, and the original solvent purification technology.



POINT 3

**PROVIDING  
CUSTOMIZED  
DESIGN SOLUTIONS**

We offer customer-tailored solutions, including the development of recycled material design solutions and the production of high-performance compounds.



POINT 4

**GLOBAL NETWORK  
& OVERSEAS  
PRODUCTION BASES**

LOTTE Chemical is known with its excellent global network(partnerships), overseas production bases and raw material sourcing vendors in Europe, Americas, and Asia.

# ECOSEED PRODUCT LIST



## RECYCLED PLASTICS

## BIO-PLASTICS



### MECHANICAL RECYCLING

As an essential component of circular economy for sustainable plastics, ECOSEED Mechanical Recycling(MR) is defined as raw plastic material that is mechanically recycled by discarded plastic from everyday life.

#### KEY MATERIALS

r-PC, r-ABS, r-PE, r-PP



### CHEMICAL RECYCLING

Chemical recycling is the process of converting polymeric waste by changing its chemical structure and turning back into substances that can be used as raw material enhancing its purity and utility.

#### DEPOLYMERIZATION

#### KEY MATERIALS

r-PET, r-ABS

#### SOLVENT PURIFICATION

#### KEY MATERIALS

r-SAN, r-ABS

#### PYROLYSIS

#### KEY MATERIALS

r-ABS, r-PC, r-PP, r-PE, r-BD, r-SM, r-MMA



### BIO-BASED

Bio-based materials are eco-friendly products that reduce carbon emissions at the raw material stage, utilizing biomass-derived raw materials.

### BIO-DEGRADABLE

Bio-degradable plastics(PHA) are based on petrochemicals which naturally decompose into water and carbon dioxide by microorganisms within a few months.



PRODUCT LINE-UP

| CATEGORY | APPLICATIONS                          | MAJOR APPLICATIONS  |
|----------|---------------------------------------|---|
| r-PC     | Electronics, Automotive, etc.         | Laptop, TV, Remote controls, Automotive Interior/Exterior, etc. |
| r-ABS    | Home appliances, Electronics, etc.    | Air conditioners, Refrigerators, etc.                           |
| r-PE     | Packaging film, Household goods, etc. | Shopping bags, etc.   |
| r-PP     | Food containers, Automotive, etc.     | Cosmetic containers, reusable cups, car bumpers, etc.           |

KEY FEATURES

- Plastic with reduced carbon emissions compared to virgin materials
- Discarded plastics are used as raw materials.



# RECYCLE PLASTICS

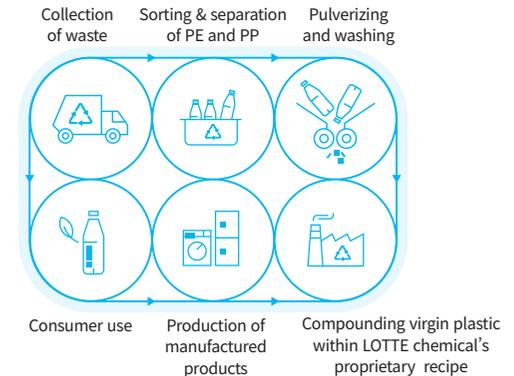
## MECHANICAL RECYCLING

### Creating a Circular Economy for Plastics

As an essential component of circular economy for sustainable plastics, ECOSEED offers a wide range portfolio based on mechanical recycling such as r-PC, r-ABS, r-PE and r-PP.

Due to its resource circulation based on compounding technology and quality control, ECOSEED is utilized based on daily life materials.

MANUFACTURING PROCESS





# RECYCLE PLASTICS

## CHEMICAL RECYCLING

### From Plastic Waste to Virgin-quality recycled Product

Chemical recycling is the process of converting polymeric waste by changing its chemical structure and turning back into substances that can be used as raw material for manufacturing plastics of other products.

DEPOLYMERIZATION

SOLVENT PURIFICATION

PYROLYSIS

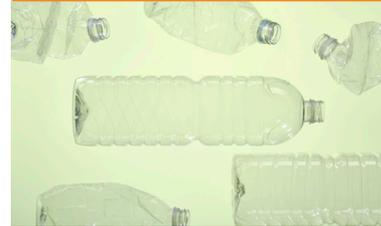
#### MANUFACTURING PROCESS



## DEPOLYMERIZATION

PRODUCT LINE-UP r-PET, r-ABS

r-PET



#### PRODUCT FEATURES

ECOSEED r-PET is a product made by colored and contaminated waste PET, so called 'hard-to-recycle' without quality degradation during recycling.

#### KEY FEATURES

- High quality and properties equivalent to virgin PET
- Ensure safety in compliance with standards for food packaging
- Free from harmful chemicals and environmental hormones

#### SCOPE OF APPLICABILITY

Food packaging, household goods, cosmetic containers, etc.

#### MAIN APPLICATIONS

Water bottles, beverage containers, salad containers etc.

r-ABS



#### PRODUCT FEATURES

ECOSEED r-ABS is produced through the chemical recycling manufacturing process, which is highlighted through "depolymerization and compounding of the collection of waste(plastic) can be alternated to various uses.

#### KEY FEATURES

- Exceptional quality and properties equivalent to virgin ABS
- Outstanding color rendering and transparency

#### SCOPE OF APPLICABILITY

Household goods, cosmetics, etc.

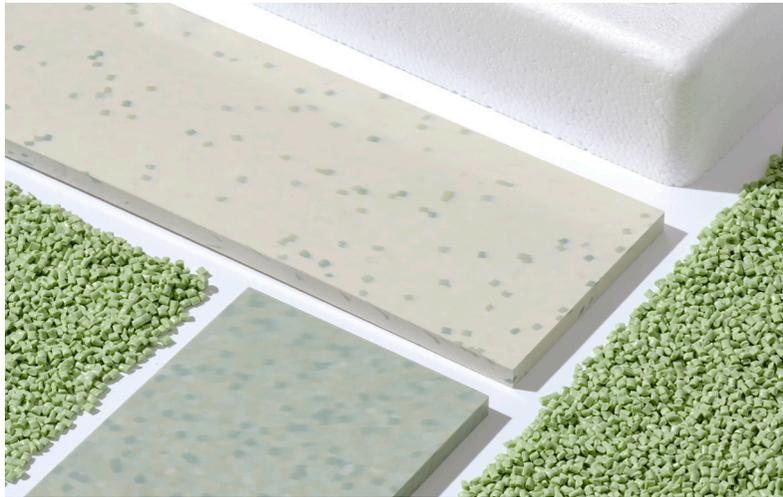
#### MAIN APPLICATIONS

Cosmetic containers, razors, etc.

## SOLVENT PURIFICATION

LOTTE Chemical has developed original technology to recycle polymers by dissolving end-of-life plastics in a solvent, and is currently expanding product applications.

**PRODUCT LINE-UP** r-SAN, r-ABS



### MANUFACTURING PROCESS



### SCOPE OF APPLICABILITY

Home appliances, electronics, household goods, etc.

### MAIN APPLICATIONS

Washing machines, refrigerators, air conditioners, etc.

## PYROLYSIS

We collect waste plastics that used to be incinerated and turn them into petrochemical materials through thermal decomposition and separation/purification.

**PRODUCT LINE-UP** POLYMER r-ABS, r-PC, r-PP, r-PE  
MONOMER r-BD, r-SM, r-MMA



### ISCC PLUS CERTIFICATION



ISCC Plus certification is an international certification that meets the Renewable Energy Directive of the European Union (EU) and verifies the traceability of sustainable raw materials such as eco-friendly bio products under strict standards.

ECOSEED has certified products such as PE, PP, BD, PET, EOA, BZ, PL, C5, C4R1, MMA, SM, H-RPG, ABS, PC compounds, etc.

### SCOPE OF APPLICABILITY



Home appliances, electronics, household goods, etc.

### MAIN APPLICATIONS

TV, phone cases, cosmetic containers and lunch containers etc.



# BIO-PLASTICS

It comes from nature and returns to nature.

Due to its objective to reduce carbon emission and expand plastic resource circulation, ECOSEED bio plastic materials are consisted with nature-origin materials and bio-degradation technology with a more diverse spectrum. Closer to nature and bio-degradation technology to reduce carbon emission and expand plastic resource circulation.

## BIO-BASED

ECOSEED Bio-PET is made from raw materials derived from sugarcane, which benefits in reducing carbon emissions. It still has excellent quality and safety, similar to conventional PET.

## MANUFACTURING PROCESS



## REDUCTION IN CARBON EMISSION

28% reduction in CO<sub>2</sub> emissions compared to petroleum-based PET production process



## CERTIFICATIONS



UL9798



BP Label

- Bio mass-based Material Content Certification (UL9798, BP Label)

## APPLICATIONS

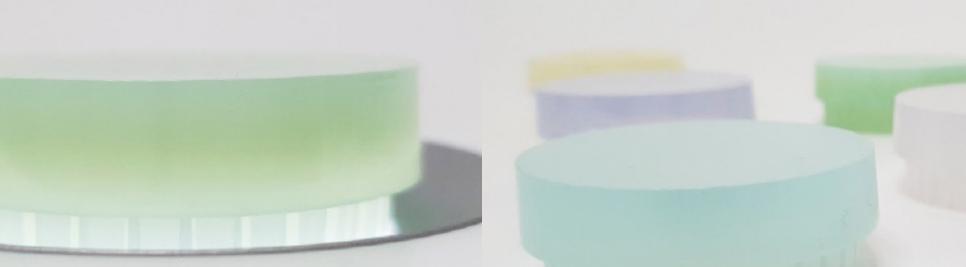
Food packaging, household goods, etc.

## MAJOR PRODUCTS

Water bottles, beverage containers, salad containers and etc.

## BIO-DEGRADABLE

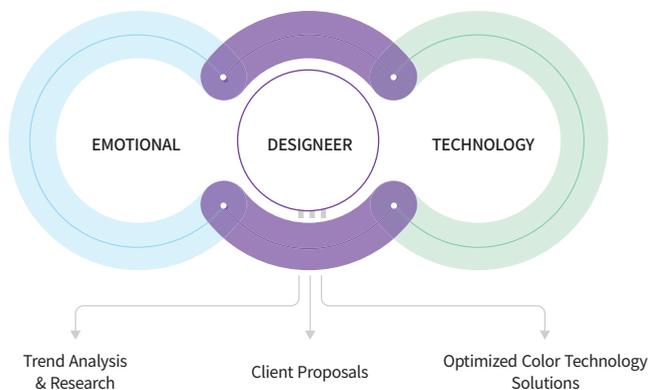
LOTTE Chemical is developing bio-degradable plastics (PHA) based on petrochemicals which naturally decompose into soil, seawater, and even reduces carbon emission through production.



## Driven by emotion + Specialized materials tailored for customers

ECOSEED offers a wide array of specialized material solutions tailored for customers keen to innovate their products, ranging from interior-exterior parts of home appliance to cutting-edge automotive parts.

Enhancing its value through offering “resource circulation sensible materials” based on trend analysis for application and material development. It combines sensibility and technology, providing a new experience on top of functionality, beauty, and convenience. ECOSEED’s products, design and solutions also benefits our lives.



ECOSEED offers a variety of materials and experiences by adding creative concepts and innovative technologies. We provide Designing + Engineering Solutions for development and discovery of innovative materials based on market trends and customer needs.

### AWARDS & RECOGNITION(DESIGN PART)



**CASE STUDY 1**  
**TEXTURE FOR NATURE**(utilizing QR CODE)  
Objective is to propose smart patterns with injection(without additional process) which eases resource circulation through injection molding.

#### MATERIALS

PC, ABS, PP

#### AWARDS

reddot(2023)



#### CASE STUDY 2

##### INSIDE MARKING

Objective is to propose an eco-friendly postprocessing cosmetic container.

#### MATERIALS

upcycling  
transparent ABS

#### AWARDS

iF(2023)



#### CASE STUDY 3

##### Speckles, Textures And above all Plastics (EF Material)

Objective is to propose an advance material that easily blends without additional post-processing.

#### MATERIALS

ABS(EF)

#### AWARDS

reddot(2018)





LOTTE CHEMICAL