Plastic products are necessary,

but we need to face the problem of recycling directly

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Chemical Depolymerization and Upcycling: Transforming PET Bottles into High-Performance PBT

Chemical recycling converts post-consumer PET waste, such as plastic bottles, into Polybutylene Terephthalate (PBT)–a higher-performance engineering plastic. This process represents true upcycling, transforming high-volume, lower-value plastic into premium materials for demanding applications.

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Precision Depolymerization and Upcycling Process

We utilize proprietary chemical depolymerization and upcycling technology to transform discarded PET bottles into high-quality PBT materials. The process requires precise control of temperature, catalysts, and reaction conditions to ensure the final product meets stringent quality standards for engineering applications..

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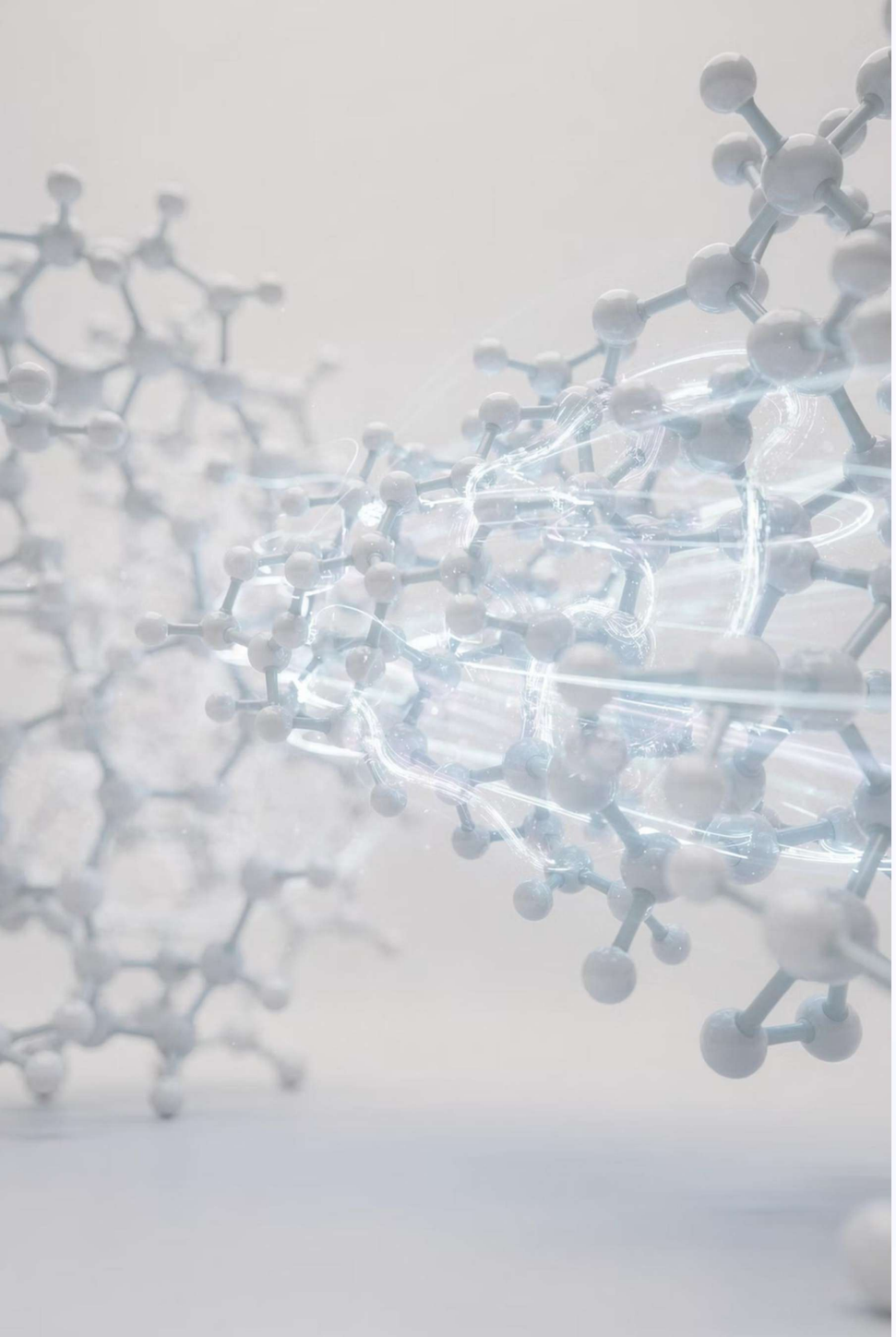

Understanding the Chemistry

Starting Material: PET

Polyethylene Terephthalate is a polyester made from terephthalic acid (TPA) and ethylene glycol (EG). It's the plastic used in billions of bottles worldwide.

The Transformation

Through glycolysis, PET flakes or pellets undergo transesterification with 1,4-butanediol, fundamentally changing the polymer structure.

End Product: PBT

Polybutylene Terephthalate emerges as an engineering thermoplastic with superior properties for demanding applications.

Environmental Impact

This unique chemical upcycling process diverts millions of plastic bottles from landfills and incinerators, creating high-value materials.

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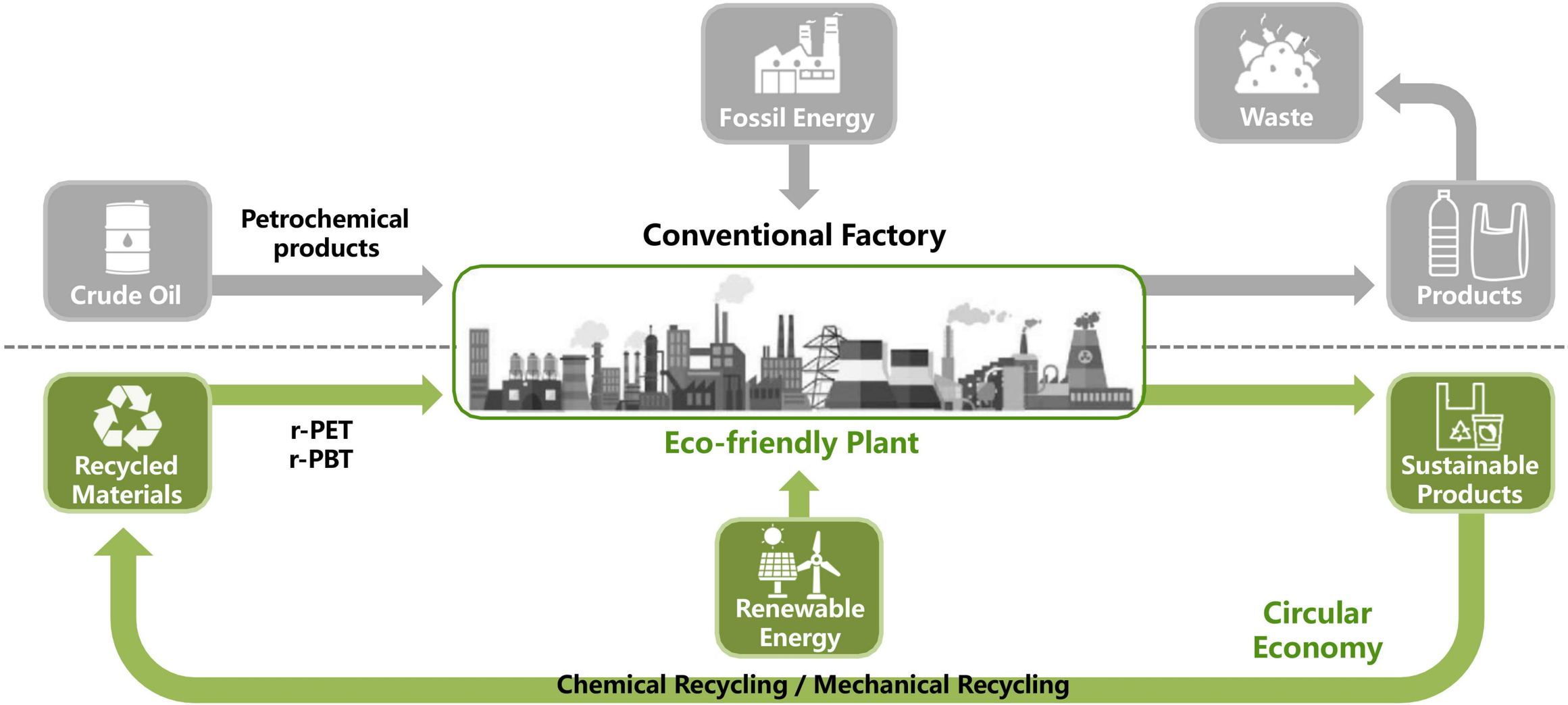
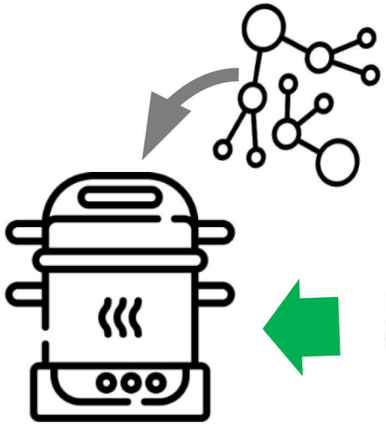
Sustainability & Circular Economy



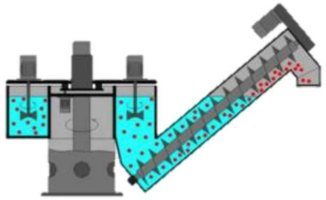
How rPBT is produced?

Indistinguishable performance
From prime materials with higher
Percent recycled content



(Repolymerlzation)

shatter



washing

R PBT chip

CHEMICAL RECYCLING

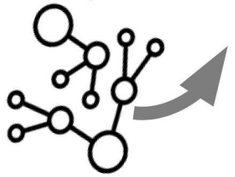
Unimited recycle iterations
Eliminates end-of-life

PET bottle
Recycling

recycle

Fossil
resources

Terephthalic
acid



autoclave

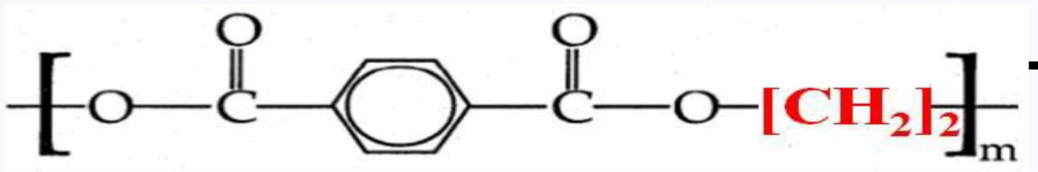
PET bottle

The Manufacturing Principle of R-PBT

PBT

EG

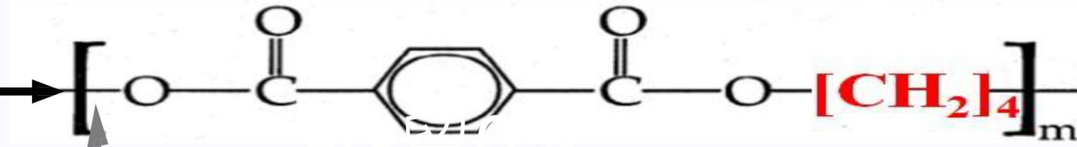
Depolymerization



Recycled PET chip
(r-PET)

1. BDO
2. Catalyst

Polymerization



60% recycled content

Applications: From Bottles to High-Performance Parts

Electrical & Electronics

Connectors, switches, and housings that require excellent electrical insulation and heat resistance.

Automotive Components

Door handles, fuse boxes, and sensor housings demanding durability and dimensional stability.

Consumer Appliances

High-performance components in appliances requiring heat resistance and reliability.

Chemically recycled PBT delivers properties comparable to virgin PBT, making it suitable for these demanding engineering applications where PET would not perform adequately.

Global Recycled Standard (GRS) Certification

The Global Recycled Standard is an international, voluntary standard for tracking and verifying recycled materials in final products. Developed by Textile Exchange, GRS applies to the full supply chain and covers a wide range of products including textiles, metal, plastic, and paper.

Products must contain a minimum of 20% recycled content and undergo third-party certification for recycled content, chain of custody, social and environmental practices, and chemical restrictions.

Our R-PBT contains 60% recycled content

KR's R-PBT: Leading the Way with 60% Recycled Content

60%

Recycled Material Content

KR's R-PBT resin is registered under GRS certification with an impressive 60% recycled material content–three times the minimum requirement.

This achievement demonstrates the viability of chemical upcycling at scale, transforming post-consumer PET waste into premium engineering materials that meet the most demanding performance standards while significantly reducing environmental impact.

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KR

Versatile Polyester Solutions: R-PET and R-PBT for Greater Design Flexibility

R-PET

Environmentally sustainable, suitable for bottles and fibers

R-PBT

High-efficiency recycling, the top choice for engineering plastics, enhancing product durability