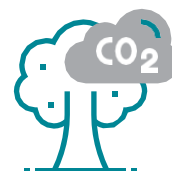


New Leader of Biodegradable & Biomass Tech





2018

- Signing a Supply Agreement With Lotte Aluminum Co., Ltd. for Uniqlo Shopping Bags

2021

- Biomass-induced adhesive biodegradable polyester resin and its manufacturing method patent registration
- Supply of straws for GS Retail (14.5 million units)
- Supply of BGF Retail (CU), GS Retail (GS25), 7-Eleven Convenience Store Biodegradable Resin and Products
- Biomass-induced adhesive biodegradable polyester resin and its manufacturing method patent registration

2022

- JDC (Jeju Airport Duty Free) biodegradable shopping bag resin supply

2023

- Supply of biodegradable coffee capsules (U.S. exports)
- Biodegradable polymer composition with excellent long-term storage and patent registration of biodegradable mulching film containing it

2024

- Establishment of a manufacturing and processing plant exclusively for Bichuk New PLA Films

2025

- Supply of eco-friendly bags for Lotte Packaging Solution (Seven-Eleven eco-friendly bags)
- Patent Registration of Low Temperature Pyrolysis Oil Production Unit

2018

2019~
2025

2026~

Biodegradable Compounds

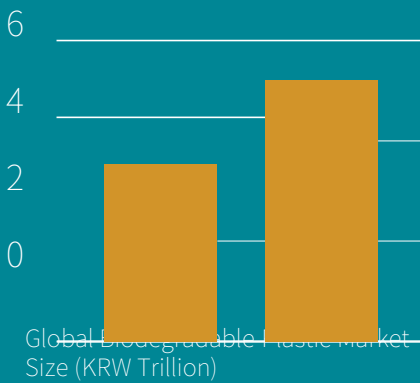


We focused on the development of biodegradable resin products for 15 years and achieved developing specialized biodegradable resin products. We supply products differentiated from other companies to the market in terms of biodegradable resin product manufacturing with a vertical systemization from the compound material to extrusion and production.

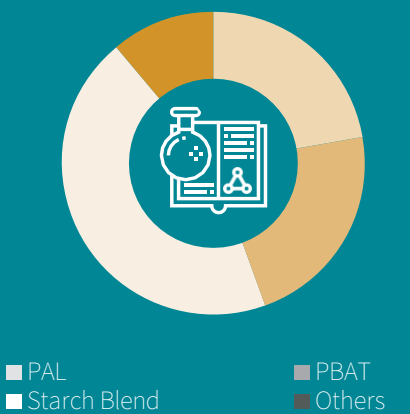
Domestic and global market sizes are expanding due to the sudden increase in demand for biodegradable materials.

This creates a potential market that is expected to grow to a large size depending on the degree of environmental legislation.

Global Biodegradable Plastic Market Size



Segmentation by Material ('19)



PBAT
(Polybutylene adipate terephthalate)



PBS
(Polybutylene succinate)



PLA
(polylactic acid)



TPS
(Thermoplastic starch)



Compound Resin

Products



Usage

- Biodegradable resins that can be applied to various vinyl, molding, and injection molding products



Mulching Film

Biodegradable Mulching Film for Garden Product Cultivation

- Mulching film removal labor minimization required due to the difficulty of a domestic labor shortage during the farming season (aging population)
- Tendency for high quality (organic rice, etc.) and special purpose crops (dry-field farming) cultivation expansion according to the agriculture opening.



Biodegradable Mulching Film for Direct Seeding of Rice

Direct Seeding Demonstration by Rural Development Administration and Gyeonggi-do Agricultural Research & Extension Services

- Supervision: National Institute of Crop Science, Rural Development Administration
- Location: Comprehensive Rice Research Building, Rural Development Administration



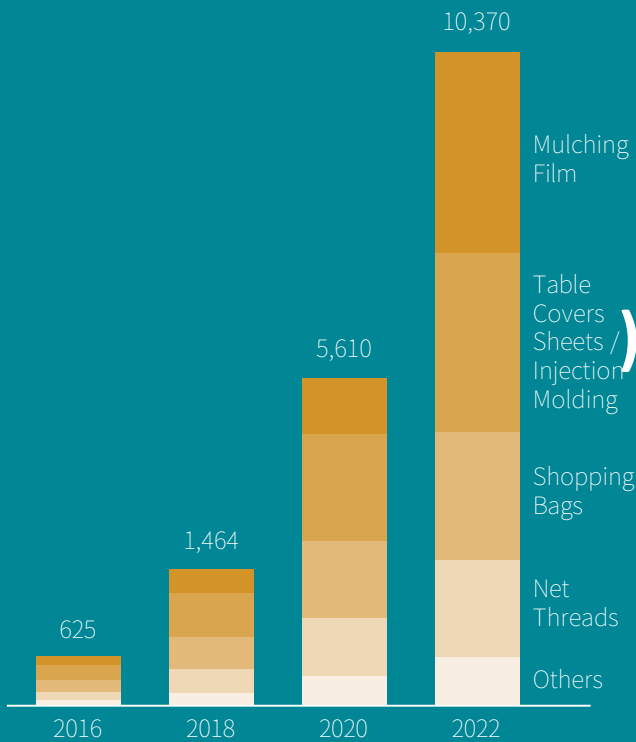


PanEco Co., Ltd. has been continuously developing new usages through cooperation with customer companies and the government, and it is expanding the usage and product demand through biodegradable shopping bags, mulching films, table covers, and injection molding based on accumulated technology and business network.

[Source: LOTTE Fine Chemical]

Domestic Demand Forecast and Expansion Strategies

[Unit: ton]



Domestic Demand Forecast and Expansion Strategies

• **Eco-friendly New Agricultural Technology Dissemination Expansion**

Sales expansion through a pilot project of the new agricultural technology of direct seeding of rice
 Promotion of cost reduction for compound products for dry-field mulching
 Eco-friendly farming promotion pilot project and sales expansion

• **Table Covers**

Market expansion through the withdrawal of greenwashing products and funeral home use legislations

• **Sheets / Injection Molding**

Expansion through niche market discover, such as disposable plates, spoons, chopsticks, forks, and knives (supply disposable products used at funeral homes through suppliers of mutual aid products)

• **Creation of Domestic Market**

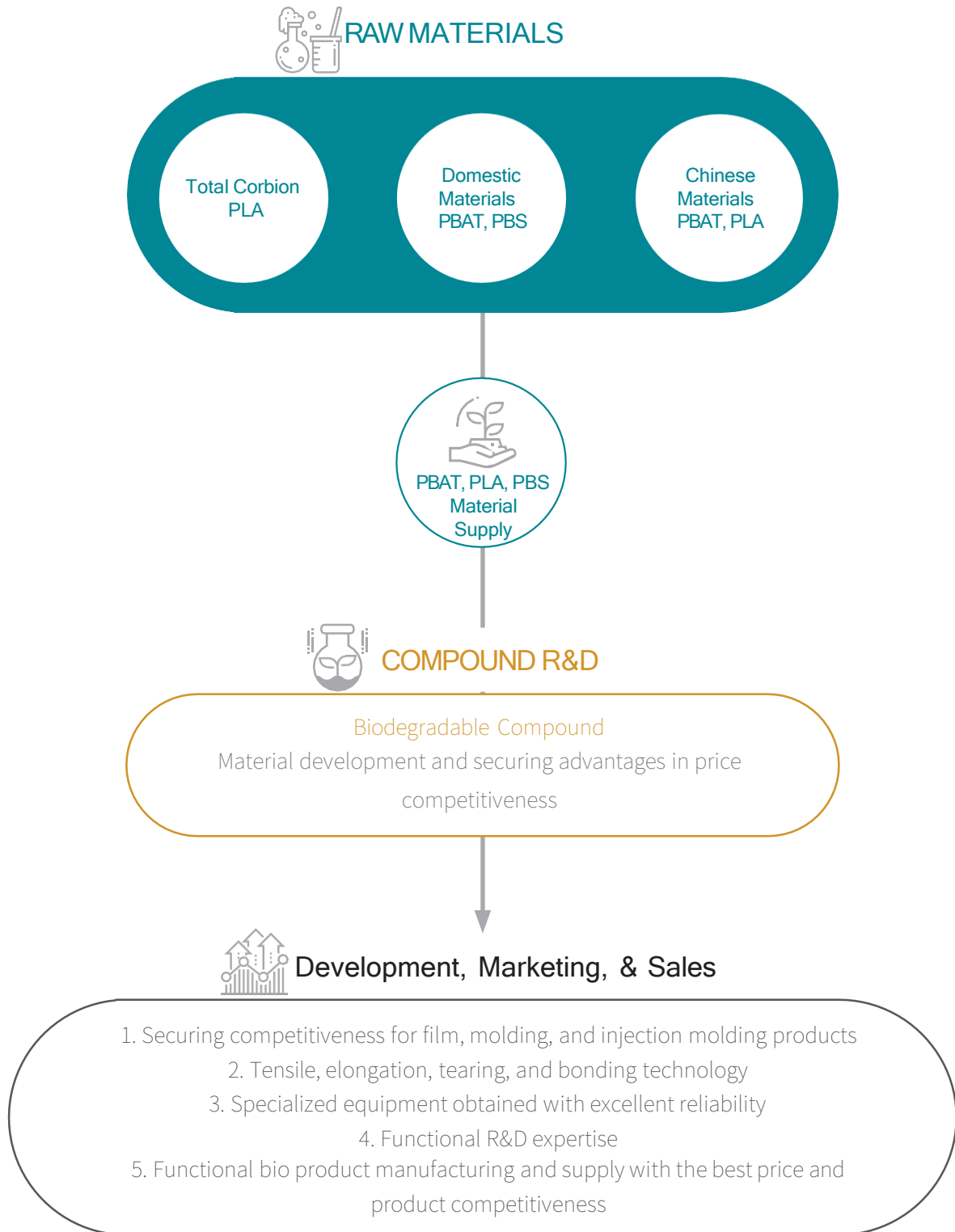
Domestic shopping bag market entry and sales expansion through LOTTE ALUMINIUM, hypermarkets, and pharmacy bag business

• **Sales Expansion through the promotion of legislation (disposable product regulation)**

Competitiveness Factors



The highest competitiveness is secured domestically and globally through vertical systemization from materials to finished goods



SWOT Analysis



- Competitiveness secured through material production
- Product excellence (quality)
- Price competitiveness (development)
- Production capacity for various biodegradable products
- High awareness through vast production experience of biodegradable products

- The price difference with synthetic resins
- Low awareness of eco-friendly products



- Low-price products advertised as biodegradable
- Biodegradable market entry of the greenwashing products

- Mandatory Purchase Enforcement Degree strengthening by the government
- Strong enforcement prohibiting the use of synthetic resins by the Ministry of Environment
- The necessity of eco-friendly materials being raised
- Export forecasting alongside global market regulations
- Brand value increase through actual commercial use
- Price gap with synthetic resins being narrowed

Certificates



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