

Paper Takes the Lead in Eco-Friendly Packaging: Hansol Paper's Sustainable Innovation

Pioneering Sustainable Alternatives to Plastic and Aluminum

Hansol Paper is establishing itself as a leader in sustainable packaging by developing eco-friendly alternatives using paper-based materials. The company is transforming traditional paper manufacturing into innovative applications that effectively replace plastic and aluminum across various industries. These sustainable products not only contribute to global sustainability efforts but also represent a significant growth opportunity for the company.

"Our vision is to become a global eco-friendly material company providing new value with cutting-edge technology," states Hansol Paper's sustainability commitment. The company focuses on developing low-carbon products that enhance recyclability through renewable paper-based raw materials, supporting both carbon neutrality and resource circulation goals.

Beyond Traditional Paper Production

Moving beyond conventional paper manufacturing, Hansol Paper has expanded into eco-friendly packaging and innovative materials. As Korea's leading paper manufacturer, the company demonstrates how paper-based solutions can effectively replace plastics in everyday applications.

Hansol Paper's eco-friendly portfolio centers around two flagship products:

- **Hansol EB:** An eco-friendly paper packaging material engineered to replace plastic film and aluminum
- **Terravas:** An innovative paper container that utilizes water-soluble coating instead of polyethylene (PE)

These products have gained traction in the food, pharmaceutical, and franchise industries. Simultaneously, Hansol Paper is accelerating the commercialization of pulp-derived materials such as cellulose and lignin through strategic partnerships.

Market Adaptation and Product Development

The packaging landscape shifted dramatically during the COVID-19 pandemic, with plastic usage surging worldwide. Recognizing mounting concerns about plastic waste, Hansol Paper began exploring more sustainable alternatives based on its paper expertise. Following internal reviews that began in 2015, the company launched new business initiatives in earnest during the 2020s.

After thorough market analysis confirmed the growth potential of eco-friendly paper packaging, Hansol Paper committed to full-scale development and facility investments. By 2019, the company had commercialized Hansol EB for coffee drip bags, officially marking its entry into sustainable packaging.

Hansol EB: High-Performance Paper Barrier

Hansol EB offers a sustainable alternative to conventional aluminum or plastic packaging through its water-based barrier coating that effectively blocks oxygen and moisture permeation. By the end of 2023, Hansol EB had been implemented in approximately 40 product categories, including:

- Food packaging (jellies, snacks, sandwiches, pouch drinks)
- Pharmaceutical and cosmetic packaging (mask packs, acne patches)

Life Cycle Assessment (LCA) demonstrates that Hansol EB emits approximately 30% less carbon compared to conventional flexible packaging films. This environmental performance has earned the product multiple certifications:

- Green Technology Certification
- UL ECV 2485 for recyclability
- FSC certification for sustainable forest management

Terravas: Enhanced Recyclability

Terravas represents another breakthrough, replacing conventional PE film with a proprietary water-soluble coating that enhances recyclability while maintaining excellent water and heat resistance. The product offers versatility across applications and can be easily recycled through standard paper waste processes. When landfilled, Terravas is biodegradable, making it an environmentally responsible alternative to PE-coated containers and plastic products. It currently serves major franchise industries for paper straws, cups, and containers.

Innovative Paper-Based Solutions

Hansol Paper has developed a paper sealing tray that combines plastic functionality with paper recyclability. This hybrid approach replaces the traditional plastic tray structure with paper while utilizing food-grade film only where necessary for barrier properties and sealability. The design enables hermetic sealing for applications requiring freshness preservation, such as meat packaging.

Importantly, this innovation is compatible with existing packaging equipment, eliminating the need for machinery replacement while reducing plastic use by over 85% compared to conventional plastic trays. The design facilitates easy separation of film and paper after use, enhancing recycling convenience.

Advanced Materials from Pulp

The company's innovation extends beyond paper applications to creating entirely new materials from pulp. "Duracle," Hansol Paper's cellulose nanofiber product, is created by processing and micronizing pulp to create a material that is optically transparent, lightweight, and extraordinarily strong. As a wood-derived product, it offers biodegradability and carbon neutrality.

When combined with other materials, Duracle provides dispersion stability and forms a three-dimensional network that increases strength while reducing the amount of rubber, plastic, or petrochemical materials required. This extends product lifespan and improves usability across applications.

Following research and development recognition of cellulose nanofibers' unique properties, Hansol Paper established Duracle production facilities in 2018. Through strategic collaborations with companies across various sectors, application technologies were secured, with implementation beginning in 2019. Current applications include:

- Urethane coatings and foam
- Automotive paint
- Electric belts for transportation
- Cosmetics (improving viscosity, moisturization, and spreadability)

"We obtained factory certification for the cellulose nanofiber manufacturing process as well as for the product itself—the first case in the paper industry to secure eco-friendly certification related to cosmetics," notes Kim Tae-yong, head of Hansol Paper's eco-friendly business team.

Addressing Microplastic Pollution

In February 2022, Hansol Paper launched "Whale-Saving Wet Wipes" to address microplastic pollution. Unlike conventional wet wipes made from plastic fabric, these wipes combine natural wood-derived pulp with plant-based rayon, eliminating microplastic contamination. The product offers excellent biodegradability and water dispersibility while featuring packaging with PCR (Post-Consumer Recycled) caps and green technology materials. After being recognized as one of Korea's Green Products of the Year in 2023, the product line is scheduled for expansion in 2024.

Circular Economy Initiatives

Hansol Paper aims to make its entire value chain more environmentally responsible through circular economy principles. The company has launched upcycled products incorporating byproducts from client manufacturing processes, such as paper made from tangerine peels and cacao board.

The Korean paper industry has begun using the term "paper resources" instead of "waste paper" to emphasize recycling value. Hansol Paper extracts pulp from recycled paper and thermally recycles byproducts generated during the refining process. Even ash produced after incineration is repurposed.

"After exploring how to repurpose inorganic materials unsuitable for thermal recycling, we developed a method to pre-treat carbon dioxide and inorganic substances to create quicklime, which is then converted into calcium carbonate—a supplementary material for paper production," explains Kim. "This approach reduces atmospheric carbon emissions while recycling byproducts."

The company is also tackling previously challenging recyclables like sterilized packaging. "For sterilized packs previously considered difficult to recycle, we are collaborating with the Korea Packaging Recycling Cooperative and twelve domestic manufacturers to establish a circular system," Kim continues. "We're recycling these materials as raw material for paper production and developing technologies to thermally recycle byproducts like aluminum and film."

To enhance recyclability, Hansol Paper has introduced technology that facilitates easy removal of double-sided coated films from sterilized packaging and installed equipment to remove fine plastic contaminants during processing.