

# Policy and Management

## Basic Stance

The Nippon Paper Group has made “delighting our customers” (by accurately responding to the needs of customers), one of the requirements of the Vision to realize its Group Mission. Through the provision of products that contribute to the building of a sustainable society, the Group aims to enhance its social and economic value as a company and to realize its Group Mission.

The Group ensures safety and quality based on the Philosophy and Basic Policy of Product Safety, and strives for the stable supply of diverse products indispensable for daily living.

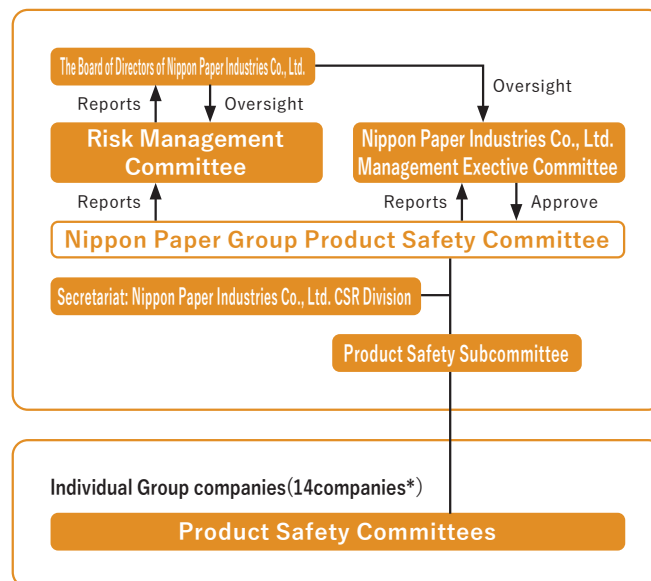
### →Philosophy and Basic Policy on Product Safety

<https://www.nipponpapergroup.com/english/csr/policies/>

## Product Safety Management Promotion System

Nippon Paper Industries has established a Risk Management Committee under the supervision of the Board of Directors. The Nippon Paper Group Product Safety Committee, chaired by the general manager of the CSR Division, manages activities related to the Group’s product safety and reports to the Risk Management Committee.

The Group complies with laws, regulations, etc. in Japan and overseas, and strives to ensure product safety using management methods appropriate to each business or product. The Product Safety Subcommittee exchanges information and opinions related to product safety among Group companies, discusses countermeasures if there are any concerns and reports to the Nippon Paper Group Product Safety Committee. Product Safety Committees or similar organizations have been established at each Group company to promote product safety activities.



\* Nippon Paper Industries, Nippon Paper Crecia, Nippon Paper Papylia, Nippon Paper Lumber, Daishowa Uniboard , Nippon Seitai Corporation, Kyouei Seitai K .K., NP Trading , Nippon Paper Development, Opal, Jujo Thermal Oy, Siam Nippon Industrial Paper, Dyna Wave Holding Asia, Akita Jujo Chemicals (As of June 30, 2021)

## Identifying Customer Needs

- Nippon Paper Group engages in proactive communication to identify customer needs across a wide range of areas, from day-to-day sales activities to quality patrols by engineering staff.
  - ▶ Explain the tree species, countries of origin, and legality of our raw materials in their efforts and third-party evaluation (see P.15-17)
  - ▶ Reply to customers engaged in CSR procurement\*<sup>1</sup> with questionnaires and other materials concerning our CSR initiatives
  - ▶ Be registered as a supplier with a global platform for disclosure of information relating to CSR procurement
  - ▶ Accepting factory tours and inspections\*<sup>2</sup>

\* Activities whereby an enterprise attempts to fulfill its social responsibilities when procuring raw materials across its entire supply chain by demanding that suppliers engage in environmental and social initiatives.

\*2 Restrictions on factory tours in some areas to prevent the spread of COVID19

CASE STUDY

### Registration with a Global CSR Procurement Platform

#### The Nippon Paper Group

The Group is also registered as a supplier with EcoVadis\*, a global information platform for CSR procurement. In 2021, the Group's CSR initiatives were evaluated as the top 5% of all registered companies and received a Gold Medal.



#### Nippon Paper Liquid Package Product

After registering with Sedex\* in FY2019, Nippon Paper Liquid Package Product Egawa Mill has undergone SMETA audits of its CSR assessments.

\* EcoVadis (a French-based company) and Sedex (a British-based NGO) both operate global information platforms designed to promote CSR procurement by businesses.

CASE STUDY

### Holding Technical Lectures for Customers

#### Nippon Paper Industries

The Paper-Pak Sales Division conducts technical lectures (Paper-Pak School) and Paper-Pak production plant tours for customers (dairy and beverage companies) providing them with information about overview of paper pack production offices.

CASE STUDY

### Customer Consultation Desk

#### Nippon Paper Crecia

The customer consultation desk offers a system whereby the opinions and questions of customers can be utilized for the further development and improvement of products.

## System for Advancing New-product Development

The Group has established its New Product Development Committee to accelerate business structure transformation. New product development teams operating under the committee identify research themes and present them in committee meetings held every three months. For themes approved by the committee, formal projects are established, with allocated human and financial resources, to promote the early development of new businesses.



# Product Safety and Quality Management

## Approach toward Product Safety

The Nippon Paper Group complies with rules for the management of chemical substances contained in products in Japan and overseas, and works to ensure product safety using management methods that match the characteristics of its business and products. With regard to food-related products in particular, we engage in management in accordance with legal regulations on food safety, management systems and standards.

**Product safety management approach**

**Overall level**  
Management of chemicals contained in products

**Food related**  
**Guidelines for paper and paperboard intended for direct contact with food**  
Specification of brands and production facilities subject to safety management measures; implementation of measures to prevent contamination by insects and other foreign objects and ensure promotion of hygiene management through enhancement of facilities and management systems; management of chemical substances based on Japan Paper Association voluntary standards; and confirmation of the functional status of the above measures

**HACCP (Hazard Analysis and Critical Control Point)**  
A hygiene management methodology that ensures the safety of products through the establishment of management criteria based on identification and analysis of hazards that could occur at all stages of the food product manufacturing process; clarification of important management points for the prevention of those hazards; and constant monitoring, measurement and recording of data to ensure compliance with those criteria

**ISO22000 food safety management system**  
An international standard for food safety management systems which incorporates the HACCP hygiene management methodology

**FSSC 22000 food safety standard**  
A food safety management system certification scheme integrating the ISO 22000 international food safety management system standard, the ISO/TS 22002 prerequisite program on food safety, and other requirements

### Acquisition of Akita Prefecture HACCP certifications (as of March 31, 2021)

Company Name	Mill, Operating Division
Akita Jujo Chemical	Headquarters factory

### Acquisition of ISO22000 certifications (as of March 31, 2021)

Company Name	Mill, Operating Division
Nippon Paper Papylia	Kochi Mill* <sup>1</sup>
Opal	Opal Kiwi Packaging Cartons Christchurch
Jujo Thermal** <sup>2</sup>	Kauttua

\*1 Production of liquid filter papers and food packaging papers that come into direct contact with food

\*2 Obtained certification in May 2021

### Acquisition of FSSC 22000 certifications (as of March 31, 2021)

Company Name	Mill, Operating Division
Nippon Paper Industries	Gotsu Mill* <sup>1</sup>
Nippon Paper Liquid Package Product	Egawa Mill, Miki Mill, Ishioka Mill
Opal	Acquired at six locations
Nippon Dynawave Packaging* <sup>2</sup>	

\*1 CMC (carboxymethyl cellulose), cellulose powder, stevia and licorice sweeteners (all for use in food)

\*2 Acquired certification for the manufacture of liquid packaging boards

## Halal certification obtained

In March 2017, halal certification\* was obtained for the nucleic acid (RNA-M) and dissolving pulp produced at the Gotsu Mill. The same certification was obtained for CMC (carboxymethyl cellulose) in October of the same year.

As a result, the Gotsu Mill can now sell halal products required by Muslims both in Japan and overseas.

\* Halal certification is presented for products that, upon inspection of raw materials, production processes, ingredient and product storage conditions, and other matters, have been determined to be in keeping with Islamic law. Products exported to Islamic countries should be Halal certified.

## Response to revision of the Food Sanitation Act and positive listing

A law promulgated on June 13, 2018 to partially revise Japan's Food Sanitation Act, etc. introduced a Positive List System that allows, for food production, only substances, equipment, containers and packaging that have been evaluated as safe for food use. On June 1, 2020, a Positive List System for synthetic resins was established. Nippon Paper Group's food product utensils, containers, and packaging comply with this system.

→ About the positive list system (Japanese only)  
[https://www.mhlw.go.jp/stf/newpage\\_05148.html](https://www.mhlw.go.jp/stf/newpage_05148.html)

## Quality Management Initiatives

Each Nippon Paper Group company works to acquire ISO 9001 international quality management standard certification as necessary and engages in quality management suited to the characteristics of its products.

### Acquisition of ISO 9001 Certification (as of March 31, 2021)

Company Name	Mill, Operating Division
Nippon Paper Industries Co., Ltd.	Shiraoi Mill* <sup>1</sup> , Akita Mill, Nakoso Mill, Kanto Mill, Fuji Mill Yoshinaga, Gotsu Mill* <sup>2</sup> , Otake Mill, Iwakuni Mill* <sup>3</sup> , Chemical Sales Division Higashimatsuyama Mill
Nippon Paper Industries CNF-related* <sup>4</sup>	Research and Development Division's Cellulose Nanofiber (CNF) Research Laboratory, Ishinomaki Mill's Cellulose Nanofiber Development Section, Biomass Material Business Division's Biomass Materials Sales Promotion Department
Nippon Paper Crecia	Tokyo Mill
Nippon Paper Papylia	Harada Mill, Suita Mill, Kochi Mill
Nippon Seitai Corporation	Hokkaido Office, Maebashi Mill, Saitama Mill, Kansai Office
Kyouei Seitai K.K	
NIPPON PAPER UNITEC	Five head office sites at headquarters (plant engineering/electricity/control systems/mechatronics/construction)
Nippon Paper Ishinomaki Technology	Headquarters
GAC	Headquarters/Mill, Marketing Division
Flowric	Headquarters, Concrete Research Center, Nagoya Mill
N&E	Head Office Plant
Opal	29 locations certified
Jujo Thermal Oy	Kaattua
Siam Nippon Industrial Paper	
Nippon Dynawave Packaging Company, LLC	
TS Plastics	

\*1 Certified for pulp and 10 machines for the production of raw paper for food, and cellulose powder.

\*2 Certified for the production of CMC, cellulose powder, nucleic acid and yeast

\*3 Chemical Production Department is certified

\*4 As of July 2021

Obtained certification for the design, development, and manufacturing of TEMPO-oxidized pulp, TEMPO-oxidized metal supported pulp, TEMPO-oxidized CNF, and CNF-reinforced resin businesses

### — Quality audits at companies making paper containers for liquids

- The Company Paper-Pak Sales Division implements the following initiatives:
  - ▶ Provide continually quality and technical support to the business locations of Nippon Paper Liquid Package Product, which are production bases.
  - ▶ Conduct on-site quality meetings and product safety and hygiene audits on an annual basis at Nippon Paper Liquid Package Product business locations.

### — Paper and paperboard division quality assurance initiatives

- The Company has adopted a Service Engineer (SE) system to shorten the distance between customers and production facilities.
  - ▶ Engineering staff involved in paper production visit sites that use paper (printing, processing) as SEs to conduct quality patrols.
  - ▶ The Company reorganized our quality assurance systems, assigning technical experts to sales divisions.
  - ▶ The Company have improved collaboration between sales and technical divisions through the holding of regular quality-information meetings

### — Responding to instances of defective products

- For defective products, action is taken by individual Group companies.
  - < Example: Paper and Paperboard Division of Nippon Paper Industries >
    - ▶ Sales technicians act as the central contact point.
    - ▶ Works with the relevant mill and head office departments to develop solutions by using tools such as a database of safety-related problems.
  - < Example: Nippon Paper Crecia >
    - ▶ All products contain the contact information of the customer consultation desk.
    - ▶ Always accept questions and comments on the Company website.

### — Verification and Audit of Wastepaper Pulp Blending Ratios and Use of Thinned Wood

- The Company established a management system for providing customers with guarantees that products are made with a specific percentage of wastepaper pulp content and with wood from forest thinning.
  - ▶ The Company manage and review production procedures at each of the Group's mills, based on the ISO 14001 environmental management system.
  - ▶ Operational management is confirmed through internal and external audits.

# The Stable Supply of Products

## Initiatives to Ensure Stable Production

- Nippon Paper Industries is implementing the following initiatives to ensure stable production:
  - ▶ To provide customers with the necessary supply at the necessary time, the Group work to secure stable raw materials supply and systematically develop and update production facilities.
  - ▶ Sales departments and production units coordinate on developing flexible production plans that avoid waste and managing inventories appropriately.
  - ▶ In December 2020, the Group established business continuity management (BCM) standards in the event that it becomes difficult to carry out normal business due to large-scale disasters, infectious diseases, etc. Each department then formulates and implements business continuity plans (BCP) based on those standards.

### **CASE STUDY** Business Continuity Management System (Nippon Paper Industries Paper-Pak Sales Division)

Nippon Paper Industries' Paper-Pak Sales Division has developed its own business continuity guidelines and established its own management system, so that it can maintain production even in times of emergency. The division is moving ahead with the selection of priority items for emergencies and procurement of key raw materials from multiple manufacturers. It has also diversified its production across multiple production sites to lower its disaster risk exposure.

### **CASE STUDY** Earthquake and Disaster Response Guidelines (newsprint business)

- ▶ In the event of damage to production equipment and facilities as a result of a major disaster, the Company will follow the guidelines for response to earthquakes and other disasters established by the Japan Paper Association's Newsprint Committee to maintain the smooth supply of newsprint.

## Stabilization of Operations

The pulp and paper industry is a prime example of a process industry, where the stable operation of equipment has a direct impact on the stable supply and quality of products. Maintaining equipment is therefore critical, and proper maintenance depends on monitoring for signs of abnormalities in machinery by conducting vibration and temperature checks.

### **CASE STUDY** Development and introduction of “e-musen junkai®” (e-wireless patrol) system

The Company and NIPPON PAPER UNITEC have developed—and are now operating—the “e-musen junkai®” (e-wireless patrol) system, which uses wireless sensors to constantly monitor machinery and equipment for signs of abnormalities.

In the past, signs of abnormalities have been discovered mainly by people patrolling production facilities. This approach depended greatly on unquantifiable skills and expertise in the form of the experience and intuition of those checking production facilities. With the e-wireless patrol system, IoT technology is used to accumulate temperature and vibration acceleration data on equipment in operation, enabling us to monitor trends in these numerical data. Responding appropriately when an abnormal trend is detected helps to prevent equipment problems and stabilize operations (see P.32).

The Company is installing the e-wireless patrol system at all of its domestic mills and actively selling it to companies outside the Group. In response to requests from domestic clients, it commenced overseas sales in Thailand in FY2019 and plans to start selling in Indonesia and Vietnam in FY2021.

→ “e-musen junkai” (e-wireless patrol) system webpage (Sales company: Sakurai)  
<https://www.sakurai.co.jp/landing/e-musen/index.html> (Japanese Only)

# Products that Contribute to the Building of a Sustainable Society

## Basic Stance

As a comprehensive biomass company shaping the future with trees, the Group develops various businesses that maximize the use of renewable woody resources using diverse technologies and expertise, and the products and services it provides have a high affinity with building a sustainable society and SDGs (Sustainable Development Goals)\*. The Group is developing various products using woody resources procured from forests with sustainable management. Furthermore, the Company utilizes the characteristics of woody resources and provides environmentally friendly products which reduce usage of fossil-based raw materials and improve recyclability and transportation efficiency etc.

«Examples of the Group’s environmentally friendly products»

**\* Improve transport efficiency**

Devising new shapes and improving packing efficiency will lead to reducing CO<sub>2</sub> emission volume during transportation.

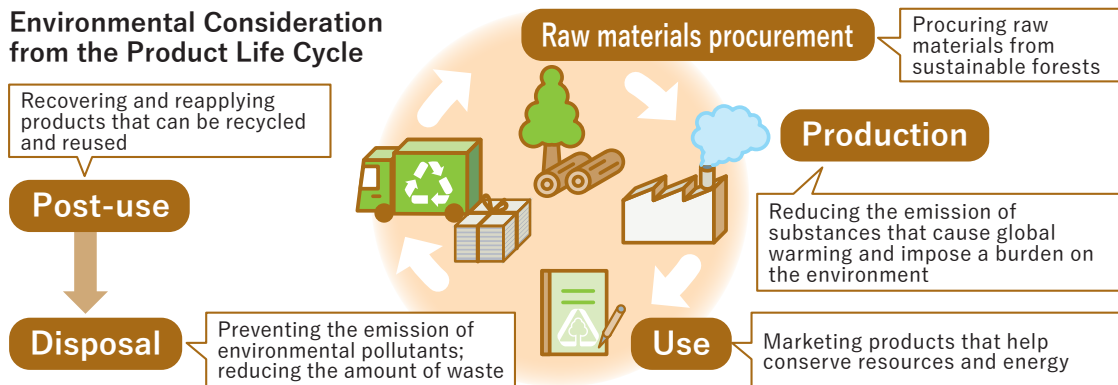
**\* Recyclability**

By separating, collecting, and extracting wood fibers from used paper products, fibers can be used as pulp for recycled paper, which reduces the volume of waste.

**\* Reduce consumption of fossil-based raw materials**

Converting conventional plastic products to paper reduces consumption of fossil-based raw materials and makes raw materials sustainable. Reducing packaging materials by devising new shapes will also lead to reducing the volume of fossil-based raw materials used.

\* As a comprehensive biomass company shaping the future with trees, the business development of the Nippon Paper Group will contribute to the achievement of the SDGs.



### CASE STUDY Forest Certification Labels on Paper-Pak products (Nippon Paper Industries)

In February 2016, the Company obtained CoC certification for FSC® (FSC®C128733) and PEFC (PEFC/31-31-171), an international forest certification system, in order to reevaluate the value of paper pack products made from biomass materials and provide customers with environmental added value not found in containers such as PET bottles and metal cans. In order to communicate to the end consumer that it is an environmentally friendly product in an easy-to-understand manner, the Company establishes a system to supply paper packs with forest certification labels to all customers.

**< Achieving SDGs through the Group’s products >**

- Uses woody raw materials from sustainably managed forests



### CASE STUDY School POP® Strawless Paper Pack for School Milk (Nippon Paper Industries)

The Company developed the “NP-PAK-mini School POP®”, a strawless school paper pack, and commercialized it in 2020. As a result of devising the shape of the pack, improving the ease of opening, pouring, and drinking, small children and students can easily open the paper container and drink from it without using a straw.



[Example of use] Himawari Kochi Milk/Ripple  
Himawari Low Fat/  
Himawari Coffee  
(Himawari Milk Co., Ltd.)

**< Achieving SDGs through the Group’s products >**

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps to minimize marine plastic waste
- Uses wood raw materials from sustainably managed forests



→ <https://www.nipponpapergroup.com/news/year/2020/news200623004677.html> (Japanese only)

**CASE STUDY** SPOPS® New Style Refill Containers (Nippon Paper Industries)

The Company has developed and commercialized SPOPS®, a replaceable paper container designed to take the place of plastic pouches for refills of shampoo and other products. The container eliminates the need for pouring from a pouch into a dispenser; Product refills are accomplished simply by replacing a cartridge (see figure). SPOPS® reduces the amount of time required for refills, its shape minimizes the amount of liquid residue leftover and offers greater stability enabling more compact storage, improving usability for customers. Since its launch 2019, the product has been used for body soap and other hotel amenities. Furthermore, due to the recent covid-19 pandemic, the need for disinfection and disinfection products has been greatly increased. Company developed “SPOPS® Hygiene”, a specification compatible with disinfectants and sterilizing products, in September 2020, and is now preparing for full-scale sales.



[Example of use] Dakekanba body soap (Nippon Paper Development)

<Achieving SDGs through the Group’s products>

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps reduce GHG emissions by reducing packaging volume (improving transportation efficiency)
- Helps to minimize marine plastic waste
- Uses wood raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/products/package/development/spops.html> (Japanese only)



**CASE STUDY** NSATOM® New Aseptic Filling System for Paper Containers (Nippon Paper Industries)

The Company and Shikoku Kakoki developed NSATOM®: an aseptic filling system for paper packaging that supports filling with solid-particle, long-fiber and high-viscosity products, and started receiving orders mainly from beverage manufacturers in November 2020.

“NSATOM®” has a unique spout and closure arrangement, and container design, making pouring easier. It is also possible to carry it around like a PET bottle because it is resealable. The Company is offering a wide range of paper containers to replace plastic ones.



<Achieving SDGs through our products>

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps to minimize marine plastic waste
- Uses woods raw materials from sustainably managed forests

→ [https://www.nipponpapergroup.com/products/paper\\_pak/nsatom/nsatom.html](https://www.nipponpapergroup.com/products/paper_pak/nsatom/nsatom.html) (Japanese only)





CASE STUDY

**SHIELDPLUS® Series Paper Barrier Materials (Nippon Paper Industries)**

The Company has developed SHIELDPLUS®: an environmentally-friendly packaging material with similar barrier properties to plastic. Performing as well as existing products, SHIELDPLUS® offers barrier properties and can be used as a substitute for other barrier films. Sales of the product began in 2017, and it has since been adopted as a packaging material for confectionery and daily use products.

The Company also started selling SHIELDPLUS II in 2020, which improves the flexible resistance of the barrier layer and enables the material to be shaped into various packaging forms. SHIELDPLUS II is an additional suitable brand for gravure printing, which is now mainstream in the soft packaging market.



[Example of use]  
Shobre/Round Baby  
(IZUMIYA TOKYOTEN Co., Ltd.)



[Example of use]  
Tenshi no (Angel) Bath Powder  
(Max Co., Ltd.)

<Achieving SDGs through the Group's products>

- ● ● Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps to minimize marine plastic waste
- Uses woody raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/english/products/shieldplus/>



CASE STUDY

**LAMINA® Heat Shield Paper that Enables Packaging to be made from Paper Alone (Nippon Paper Industries)**

The Company has developed and started selling LAMINA®, a packaging material that enables the creation of packaging using only paper, without the use of plastic. This packaging material uses paper as the base material, and enables the creation of packaging without laminate processing.

LAMINA® can be used for a wide range of applications, including food products that do not require barrier-type packaging, secondary packaging, daily use items and magazines.



[Example of use]  
Bijinkenkyujo/Macrobiotic  
Beauty Paste  
(ALL is GOOD)



[Example of use]  
Nonno pocket-size toilet paper  
(Tokyoshiko Co., Ltd.)

<Achieving SDGs through the Group's products>

- ● ● Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps to minimize marine plastic waste
- Uses wood raw materials from sustainably managed forests

→ [https://www.nipponpapergroup.com/products/package/thick\\_paper/lamina.html](https://www.nipponpapergroup.com/products/package/thick_paper/lamina.html) (Japanese)



CASE STUDY

**Paper Straws (Nippon Paper Industries)**

In response to rapidly growing demand for alternatives to plastic in recent years, the Company has developed highly durable paper straws with a pleasant texture. Sales of these straws began in 2019.

The Group's paper straws are used in numerous stores, including restaurants, cafes and shopping center food courts.



[Example of use] AlohaTable (Photograph obtained with cooperation from AlohaTable Daikanyama)

<Achieving SDGs through the Group's products>

- ● ● Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps to minimize marine plastic waste
- Uses woody raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/english/products/paperstraw/>



CASE STUDY

**CELLENPIA® A Biomass Material Derived from Plant Fiber (Nippon Paper Industries)**

The Company developed cellulose nanofiber (CNF), CELLENPIA®. CNF is a cutting-edge biomass materials produced by defibrating plant fibers into nanofibers. There are two types of CELLENPIA®: TEMPO-oxidized CNF and Carboxymethylated CNF (CM-CNF). The Company is promoting both types for use in industrial applications, but CM-CNF can also be used in food and cosmetics. CNF has a wide variety of functions (for example: strength reinforcement, thickening, moisturizing, emulsification stability, oxygen barrier properties), so it is expected to be used in a wide range of fields. It is already being used in coating agents, dispersion stabilizers, reinforcements, foods (Japanese sweets, etc.), various cosmetics, etc.



[Example of use] Dorayaki (pancakes stuffed with sweet red bean paste) (Tago no Tsuki Co., Ltd.)

< Achieving SDGs through the Group's products >

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Uses wood raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/english/products/cnf/>

9 産業と技術革新の基盤をつくろう	12 つくる責任 つかう責任	15 陸の豊かさも守ろう

CASE STUDY

**Metal-Supported Modified Cellulose (Nippon Paper Industries)**

The Company has developed metal-supported modified cellulose, which uses modified cellulose as an intermediate product of CNF production. A metal ion support is then applied to the surface to create a biomass material that has the same antimicrobial, antiviral, and deodorizing properties as metal ions. Since the material is easy to process into unwoven fabric, paper, etc., it can be used in daily miscellaneous goods and industrial applications such as sanitary materials, and filters made from an unwoven fabric base.

The Company has developed npi antiviral paper\* based on this product. The high antiviral, antibacterial, and deodorizing properties of metal ions make it possible to use them in a variety of applications, including mask case.

\*This product is not intended for medical use, such as pharmaceuticals or medical devices.  
The antiviral properties are not maintained in all printing and processing methods.

< Achieving SDGs through the Group's products >

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Uses woody raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/news/year/2020/news200818004742.html> (Japanese)

9 産業と技術革新の基盤をつくろう	12 つくる責任 つかう責任	15 陸の豊かさも守ろう

CASE STUDY

**CNF-Reinforced Plastic (Nippon Paper Industries)**

The Company has developed CNF-reinforced plastic, a high-strength resin achieved by mixing CNF with plastic such as polypropylene and nylon. Compared to glass fiber, which is a widely used reinforcing material, this reinforced plastic is expected to reduce the weight of automobile parts by using CNF with low relative density. It is also highly recyclable and expected to be used in a wide range of industries such as building materials and home appliances.

< Achieving SDGs through the Group's products >

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Uses woody raw materials from sustainably managed forests
- Adding CNF improves strength, etc. and makes the material thinner and lighter, thus reducing environmental impact when driving (example: automotive parts)

→ <https://www.nipponpapergroup.com/news/year/2017/news170712003856.html> (Japanese only)

9 産業と技術革新の基盤をつくろう	12 つくる責任 つかう責任
13 気候変動に具体的な対策を	15 陸の豊かさも守ろう

**CASE STUDY** MinerPa® New Functional Material (Nippon Paper Industries)

The Company has developed MinerPa®, a new material in which particulate minerals are densely bonded to the surface of wood pulp (cellulose fiber).

Using wood pulp—which is a recyclable natural fiber—as its basic raw material, MinerPa® is a functional material that offers the unique formability of pulp together with various functions derived from minerals, including deodorizing/antibacterial properties, flame retardancy, X-ray radiation shielding effects and antiviral properties. In 2018, a demonstration plant was established at our Fuji Mill to carry out sample work for commercialization. The deodorizing properties were highly evaluated, and the material was used in cat litter from February 2021.



[Example of use]  
Cat litter (Iris Ohyama Inc.)

<Achieving SDGs through the Group's products>

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Uses woody raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/research/organize/minerpa/> (Japanese only)



**CASE STUDY** Torrefied Biocomposite™ New Resin Composite (Nippon Paper Industries)

The Company developed a composite material (Torrefied Biocomposite™) made from woody raw materials and resins in collaboration with the Japan Steel Works, Ltd.

The Company applied its torrefaction technology to create Torrefied Biocomposite™ as a high blend of woody raw materials that is heat resistant, pulverized, and hydrophobic, and that can reduce plastic use by over 50%, and, as such, help reduce GHG emissions.

Going forward, the Company intends to commercialize Torrefied Biocomposite™ by developing applications in various fields, including building materials, home appliances, and horticulture.



<Achieving SDGs through the Group's products>

- Plant-derived biomass materials with low environmental impact in terms of production and disposal
- Helps reduce GHG emissions
- Helps to minimize marine plastic waste
- Uses wood raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/news/year/2021/news210204004808.html> (Japanese)



**CASE STUDY** Series of Long-lasting Rolls (Nippon Paper Crecia)

Nippon Paper Crecia has developed and launched a longer lasting toilet paper roll, which increases usability for customers and also contributes to reducing environmental load. The Scottie® Flowerpack four-roll, triple-length (double) pack offers rolls that are three times\* longer than previous versions. This reduces the time and effort of replacing spent toilet paper rolls and reduces the amount of storage space required, enabling more effective use of available space. The rolls are also compact and highly portable, offering greater usability for customers.

The product also contributes to reducing environmental load\*, such as by reducing the need for secondary materials such as toilet roll cores and cutting CO<sub>2</sub> emissions by improving loading efficiency during transportation. It also sells SCOTTIE® fine Four-roll, triple-length Kitchen Paper Towel as part of our long-lasting roll series.

\*Comparison with Scottie® Flowerpack 12-roll (double) pack



<Achieving SDGs through the Group's products>

- Uses ecofriendly energy
- Helps conserve resources by reducing secondary material, etc.
- Helps reduce GHG emissions by improving transportation efficiency
- Uses woody raw materials from sustainably managed forests

→ <https://scottie.crecia.jp/nagamochi/> (Japanese only)



**CASE STUDY** Waterproof Linerboard, Multi-functional Corrugated Paper(Nippon Tokai Industrial Paper Supply)

Nippon Tokai Industrial Paper Supply developed a recyclable, multi-functional corrugated paper “waterproof linerboard” in response to recent demand for ecofriendly products and de-plasticization.

The waterproof linerboard is highly watertight and can be molded into different shaped boxes to facilitate the transportation of ice-filled products in the same way as styrofoam. The cardboard can also be folded into a small, compact shape so it doesn't take up much storage space before and after use and, as such, improves transportation efficiency.

After use, it can be recycled as waste paper. When no longer need, it can be recycled as used paper.



Transporting fresh fish (illustration)

<Achieving SDGs through the Group's products>

- Can be recycled as used paper
- Helps reduce GHG emissions by improving transportation efficiency
- Lower use of petroleum-derived raw-materials
- Helps to minimize marine plastic waste
- Uses wood raw materials from sustainably managed forests

→ <https://www.nipponpapergroup.com/news/year/2021/news210316004835.html> (Japanese)

