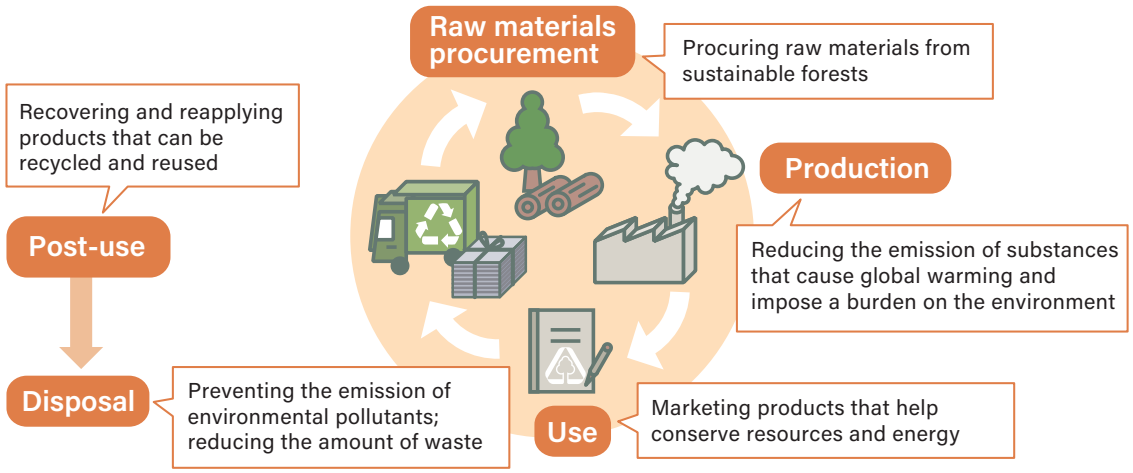
Products that Contribute to Building a Sustainable Society - the CELLENPIA® series -

Basic Stance

Nippon Paper Group products use wood raw materials, which are renewable biomass resources, and are also recyclable. This gives them a high affinity with the concept of building a sustainable society.Based on this, each Group company strives to develop products that are cognizant of the environment at every stage, beginning with raw material procurement and proceeding through production, use,post-use, and disposal.

Environmental Consideration from the Product Life Cycle



What is CELLENPIA®? (cellulose nanofiber)

Nippon Paper Industries has developed the CELLENPIA® series of products that utilizes cellulose nanofiber (CNF) and intermediates for CNF production.
CNF is made from wood-derived fiber (pulp) that has been micro-refined to the nano level of several hundredths of a micron and smaller, cellulose nanofiber is one of the world's most advanced biomass material. Because CNF is derived from plant fibers, the environmental impact from production and disposal is low. Due to its light-weight characteristics, the modulus of elasticity has the same level of strength as that of aramid fiber, which is known as a high-strength fiber, and has thermal expansion on par with glass. CNF also has excellent gas barrier properties against oxygen. It is anticipated that these properties of CNF will find application in a wide range of fields, and there are increasingly more and more products on the market that use CNF. At Nippon Paper Industries, CNF comes in two types (TEMPO-oxidized CNF and carboxymethylated CNF). The industrial applications of both types are being promoted, but carboxymethylated CNF (CM-CNF) can also be used with food and cosmetics. One of the strengths of our CNF is that it can be used in such a wide range of applications. In addition, since 2017, mass production facilities have been operational at two sites, at Ishinomaki Mill (Ishinomaki City, Miyagi) and Gotsu Mill (Gotsu City, Shimane), enabling stable supply. Further, Nippon Paper Industries is developing technology whereby the surface of the modified cellulose that is an intermediate of the CNF manufacturing process can be loaded with metal ions, thereby allowing us to impart the anti-bacterial, anti-virus and deodorant properties of metal ions to CNF.

CELLENPIA® Product Information https://www.nipponpapergroup.com/english/products/cnf/

What is metal-supported modified cellulose? https://www.nipponpapergroup.com/news/year/2020/news200818004742.html (Japanese only)

Environmentally friendly Point

Raw materials procurement
Our raw materials are timber products sourced from sustainably managed forests.

Use
Examples: Automobile parts - The addition of CNF can improve parts strength and make them thinner and lighter, thus reducing the environmental load when driving.
Emulsifiers and dispersants - The use of CNF leads to a reduction in the quantities of conventional petroleum-derived emulsifiers and dispersants used.

Example of use

High performance tire “ENASAVE NEXTⅢ” (Sumitomo Rubber Industries, Ltd.)

"ENASAVE NEXTⅢ" has been developed as a high-performance tire with greater environmental performance across the entire product life cycle including raw materials and product usage. Our product, CELLENPIA®, a renewable resource derived from wood, shares this concept, and so was adopted after undergoing performance trials. The addition of CELLENPIA® not only improves functional performance, but also contributes to the environmental-friendliness of the product.

https://www.nipponpapergroup.com/english/news/year/2019/news191025004611.html

Paper barrier cup for beverages “CNF Eco Flat Cup®” (Toppan Printing Co., Ltd.)

A base paper coated with our original CELLENPIA® by Nippon Paper Crecia Co., Ltd. has been selected for use in paper barrier cups for beverages. The use of this base paper enables the amount of plastic used to be reduced by about 50% compared to conventional plastic cups for beverages, which can contribute to the reduction of marine plastic waste.

https://www.nipponpapergroup.com/news/year/2020/news200327004669.html (Japanese only)

Concept car “Nature-gifted automobile” (Ministry of the Environment, NCV Project)

Our CNF-reinforced resin has been used in the concept car “Nature-gifted automobile”, produced through the Ministry of the Environment’s demonstration NCV (Nano Cellulose Vehicle) project. The NCV project is a joint industry-government-academia project that is putting CNF to use with the aim of reducing the weight of automobiles by around 10%. We worked to develop CNF-reinforced resin at the demonstration production facility at our Fuji Mill, and provided the NCV project with samples of the CNF-reinforced resin manufactured at the demonstration facility.

https://www.nipponpapergroup.com/news/year/2019/news191029004608.html (Japanese only)

Mouth gel “HITEETH” (RBP Co., Ltd.)

The mouth gel "HITEETH" was developed featuring 100% natural ingredients, and CELLENPIA® was selected because it is made from plants, a renewable resource. The use of CELLENPIA® not only contributes to the functional effects of increased viscosity and dispersion, but also to consideration for the environment.