

## Initiatives to Disseminate Eco-friendly Products

Nippon Paint Holdings Group is committed to "mitigation of environmental impact with products and services" as one of the CSR targets. In 2019, we specified the definition of eco-friendly products. In the future, we will contribute to the sustainable development of society through the realization of the "society that we would like to have in 2030."

### Contribution to the global environment through products

While the United Nations adopted sustainable development goals (SDGs) in 2015, private companies including Nippon Paint Holdings are also expected to help achieve them. Our Group is committed to "mitigation of environmental impact with products" as one of the CSR targets. In March 2019, we specified the definition of eco-friendly products.

Envisaging the "society we would like to have in 2030" (upper part of the figure), our Group has discussed what we can do as a paint manufacturer to help realize it from a future-oriented perspective. The discussions identified the five types of eco-friendly products

as mentioned in the bottom part of the figure. They are products with low environmental impact on their own and can also reduce environmental impact through various effects including energy saving in the painting process and heat insulation performance as well as the reduction of industrial waste through the extension of service life.

Our Group will contribute to the sustainable development of society through the development and dissemination of those eco-friendly products.

Sustainable society envisaged by the Nippon Paint Holdings Group = Society that we would like to have in 2030 (environmental aspects)	Related SDGs
Society that can use social infrastructure for a long time and be maintained with the consumption of fewer resources	 
Society where CO <sub>2</sub> emissions are reduced through energy saving to curb global warming	  
Society where substances of concern are not released into the environment to maintain clean water and air	 
Society where the pollution of water sources and oceans is prevented and the ecosystem is conserved	 

Realized through the development and widespread use of products

Eco-friendly products of the Nippon Paint Holdings Group (definition)	
①	Products that can <b>substantially extend the life of coating films and coated objects</b> and reduce waste generation to contribute to the effective use of resources in comparison with general products
②	Products that can <b>greatly improve energy efficiency at the time of using coated objects based on the functions of coating films</b> in comparison with the use of general products to mitigate the impact on climate change
③	Products that can <b>greatly lower the energy consumption for coating and surface treatment process</b> in comparison with general products and thereby mitigate the impact on climate change
④	Products that <b>substantially reduce the release of chemical substances into the environment in the coating and surface treatment process</b> in comparison with general products to minimize environmental destruction and health hazard to the painters
⑤	Products that greatly improve the efficiency of resource use in comparison with general products and <b>allow the application of environmentally friendly technology and industrial process</b>

## Activities of domestic operating companies for eco-friendly products in fiscal 2018

### Trade-use paints

"Water-based Perfect Sealer" for exterior walls of houses released by NPTU in 2018 can be also used for water-based coating of substrate surfaces of sophisticated siding boards, which was conventionally possible only with solvent products. In addition, "Toughguard Smart O-DE Mesh System," which was released on a trial basis in the same year, is a coating system that prevents flaking of concrete and is non-dangerous in all processes. All paints used in the processes are water-based to enhance safety, address odor, and thereby improve working conditions. The system is scheduled to be officially released by the end of 2019.

### Industrial coatings

Powder paints are paints in a powder form as the name suggests. Their features include the use of no organic solvent and easy automation of the coating process without the need to depend on experienced engineers. The paints are mainly used in the production lines of steel furniture, construction materials, home electric appliances, etc. Those features are recognized as advantages in the market because they help respond to current environmental regulations on solvents and make up for the shortage of human resources. Demand for powder paints is therefore growing and replacing that for conventional liquid paints. NPIU started to upgrade the powder paint production facilities in Chiba Plant in 2018 and is scheduled to begin their operation for the first period in October 2019. The production process will be streamlined to double the production volume without increasing the workers. As the CO<sub>2</sub> emissions per production volume can be also reduced, the production process, in addition to the powder paints themselves, will be environmentally friendly.

### Auto refinish paint

NPTU renewed "nax E-CUBE WB Water-based System," which is auto refinish paints to complete the coating process only with water-based paints, in 2018. As the paints are non-dangerous and low-odor and also as weather-resistant as solvents, they will improve the working environment of sheet metal coating and also help secure and develop young personnel and create plants that are loved by the local communities.



Next-generation water-based paints "naxE-CUBE WB"

### Automotive coatings

An effective measure to improve the fuel efficiency of cars is to reduce the weight of car bodies. The range of car body parts to which resin materials, which are lighter than iron materials, can apply is expanding. Since heat resistance of such resin materials is generally lower than that of iron, it is necessary to attach them to iron materials after coating and drying in different processes using dedicated paints that respond at a relatively low temperature. This decreases production efficiency and also has more environmental impact. Therefore, NPAU has worked to develop paints that can respond at a low temperature and also deliver necessary performance on any type of materials with an aim to paint iron materials and resin materials together. As the realization of this technology closely involves the car production process, the company cooperates with car manufacturers and also examines process-related aspects such as the recoating method.

### Marine coatings

Coatings for ship bottoms normally contain antifouling agents. The coating film surface gradually dissolves in seawater to renew itself and elute the agents intentionally to have an antifouling effect. On the other hand, the antifouling agents eluted into the sea can pose a risk to the environment. Developed by NPMC, AQUATERRAS is a new coating for ship bottoms that can have an antifouling effect with no use of antifouling agents. Unlike conventional antifouling paints, it is totally antifouling agent free and designed to be friendly to the marine environment based on the patented new hydrolysis antifouling technology developed by the company "HydrophiX®." The paint prevents fouling for a long time and greatly improves fuel efficiency.

### Surface treatment

One of the representative surface treatment techniques is zinc phosphate treatment. NPSU has applied film-forming agents with similar performance as zinc phosphate treatment and the following environmental advantages at the same time to the fields of automobiles and general industry since 2003.

- Reduction of the emission of substances of concern: contain no heavy metal (zinc, nickel, manganese) ion or phosphorus.
- Reduction of industrial waste: reduce sludge to less than one-tenth in comparison with zinc phosphate treatment.
- Reduction of water use: eliminate the need for the surface adjustment process and shorten the treatment process.

Through the development and introduction of those eco-friendly products, we will actively contribute to the reduction of environmental impact.



Zinc phosphate treatment



Environmentally friendly film-forming agent

The amount of sludge is significantly reduced