

Climate change    Biodiversity    Promotion of resource saving and recycling    Alternatives for hazardous or legally regulated substances

## Products that contribute to climate change adaptation

(environmental Information /disaster prevention and mitigation products)

Explosives & Propulsion business    NiGK Corporation

- Marine instruments, rocket fuel
- Industrial explosives
- Temperature indicator materials



As climate change progresses, there may be an increase in the need to survey the entire world, including seawater temperatures. In addition, there may be an increase in embankment construction to safeguard against the risk of storm surges and other such conditions. Marine instruments and rocket fuel for these environmental surveys, as well as industrial explosives used to procure rocks and sediment from the mountains, will make positive contributions in this area.

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## Products that contribute to conservation of marine environments

Functional Materials business

- Eco-friendly stern tube bearing oil

MILLUBE® ST-100U	Mineral oil	Eco-friendly lubricants supplied by competitors	
		Company A	Company B
After 30 days	After 30 days	After 7 days	After 5 days
No rust or corrosion	No rust or corrosion	Visible rust, corrosion	Visible rust, corrosion

Results of anti-corrosive coatings (The shafts were soaked in a 60°C mixture of lubricant (95%) and natural seawater (5%) for a certain period of time to compare anti-corrosion performance of lubricants.)

After a major oil spill in the Gulf of Mexico in 2010, the United States' 2013 Vessel General Permit (VGP) regulations came into effect for all vessels in 2013. This regulation has led to growing global demand for biodegradable, eco-friendly lubricants. We developed MILLUBE® ST-100U stern tube bearing oil that meets the needs of the market by greatly improving the lubrication and anti-corrosion performance of conventional biodegradable lubricants offered by other companies. The product, which satisfies 2013 VGP regulations in terms of high biodegradability, low toxicity, and low bioaccumulation, is a superior lubricant that can help conserve marine environments.

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## Products that contribute to protection of animals (disinfectants)

Explosives & Propulsion business | HOKKAIDO NOF CORPORATION

- Neutral antifreeze solution for the livestock industry



Barns, vehicles, etc. are disinfected for hygienic livestock management, but the disinfectant freezes in the winter, so it must be mixed with antifreeze. We contribute to protection of animals with Viva Frostir®, a neutral antifreeze solution for the livestock industry that is gentle to animals and humans.

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## Products that contribute to protection of animals (weak calves, dirt removal)

- Agriculture-related products (NEODRINK®, Za Yoroi-Otoshi)

NEODRINK® is a nutritional supplement for maintaining the physical strength of weak calves, and Za Yoroi-Otoshi helps reduce stress in cows by quickly removing stubbornly-stuck dirt from the cows' bodies.

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## Products that contribute to environmental conservation

- Anti-sticking agents for asphalt mixtures | Functional Materials business

In road construction, asphalt mixtures often stick to the cargo beds and hoppers used within plant facilities, and to prevent this trouble, petroleum-derived adhesion preventers have been used. However, conventional adhesion preventers are not friendly to the environment; they contaminate soil and/or water. ASPHARAB®, made from natural oil, contributes to environmental conservation as a highly biodegradable product.



ASPHARAB® not used | ASPHARAB® used



Eco Mark Certification Number: 12110001 / 09110001  
Name of utilizing contractor: NOF CORPORATION  
Product: ASPHARAB® series ASPHASOL® series

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### Products that contribute to the utilization of recycled paper

- Deposit control agent

Recycled paper resources contain numerous impurities, including sticky substances such as adhesives. These impurities lower the efficiency of the paper recycling process and impact the quality of the product. The pitch control agent MILLSPRAY®, SPANOL® and DETAC® and the removing agent BIOREX® have solved these problems and promote the recycling of waste paper.

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YUKA SANGYO CO., LTD.



These products demonstrate their superior performance in reducing impurities that generate in the paper-making process.

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### Products that contribute to recycling

- Vulcanized rubber substitutes

While large quantities of vulcanized rubber are used in auto parts and sealing materials, which have to be highly resistant to heat and oil, vulcanized rubber can never be molten once it is molded, and therefore cannot be recycled. Unlike this, the NOFALLOY® TZ series, which can be heated for re-melting as many times as wanted for recycling, is extensively utilized as a substitute for vulcanized rubber.

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Products made recyclable by the use of NOFALLOY® TZ series

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### Products that contribute to efficient resources utilization

- Copper paste for screen printing

Etching is the standard method for forming copper wiring on electronic circuit boards. However, this method requires waste fluid processing because copper waste fluid is generated as most of copper foil is dissolved. The copper paste developed by NOF makes it possible to directly draw copper wire on the necessary areas through the screen printing method. For this reason, it is possible to form copper wiring that is not wasteful without generating waste fluid, which in turn makes it possible to use resources efficiently and contribute to environmental preservation.

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Example of use in printing of copper paste by screen printing


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### Products that contribute to reducing environmental impact

- Low-VOC\* curing agents

Bath tubs are manufactured by thermally curing unsaturated polyester resin. PERHEXYL® A is a curing agent that can shorten the molding cycle and moreover significantly reduce the VOC, an environmental load that remains in the molded product.

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\* Volatile Organic Compounds