

Functional Chemicals segment

Functional Materials business

We will enhance our competitiveness and develop sustainable products with a combination of a wide variety of materials and technologies for oleo & speciality chemicals and functional chemicals & polymers.

Business strengths

- Covers diverse industries, centered on fatty acid derivatives
- Top-class lineup of cosmetic materials in Japan
- Highly advanced technology for miniaturization of electronic components
- Developing high-performance products in collaboration with resin manufacturers
- Reliable technological capabilities in refining, synthesis, formulation, and more
- Promoting global business development by increasing the overseas sales ratio

Executive Operating
Officer
General Manager,
Functional Materials
Division

**Kenshiro
Shuto**



The Oleo & Speciality Chemicals Division, whose core products were various derivatives made from oils and fats, and the Functional Chemicals & Polymers Division, whose core products were petrochemicals, were merged to form a division with a wide range of materials and technologies, including fatty acids, fatty acid derivatives, surfactants, ethylene oxide and propylene oxide derivatives, organic peroxides, polybutene, functional polymers and electronic materials. This business domains encompasses all of NOF's three prioritized business fields, and aims to expand business in each of these growth fields.

The biggest goal is to develop more sustainable products while increasing competitiveness in the market. We are focusing on proposals that integrate materials in oleo and speciality chemicals, such as eco-friendly products that utilize biomass, along with products that improve the performance of polybutene with the application of oleo emulsification technology. Moreover, for our R&D, in addition to our key technologies such as functional polymers, we are working to consolidate and strengthen our technologies by integrating the additive design technology of oleo & speciality chemicals and the

resin evaluation technology, while pursuing technological innovation and the creation of new, higher-performance materials.

We will establish our position in the market through provision of innovative products while flexibly responding to global needs and environment changes. To achieve a sustainable business model, we emphasize the integration of technology in our strategic proposals and R&D. Along with improving our competitiveness in the market, we aim to have consideration for the global environment and contribute to building a sustainable society.

Functional Chemicals segment

Main products and uses

- Fatty acids**
 (for tires, rubber, and other resin products, etc.)
 NAA®
- Fatty acid derivatives**
 (for base material for refrigerating oils, toner for printing machines, lubricants, gear oil, etc.)
 UNISTER®, MILLUBE®, ELECTOL®
- Surfactants**
 (for cosmetics, various detergents, etc.)
 UNILUBE®, DIAPON®, STAFOAM®, LUMINOVEIL®
- Ethylene oxide/propylene oxide (EO/PO) derivatives**
 (for cosmetics, electronic components, coatings, adhesives, etc.)
 WILBRIDE®, MALIALIM®, BLEMME®
- Organic peroxides**
 (for various plastic and rubber products, golf balls, home appliances, construction materials, automobile interiors and exteriors, etc.)
 PERBUTYL®, PERHEXYL®, PERCUMYL®, PEROYL®
- Petrochemical products**
 (for lubricants, various kinds of tape, adhesive plasters/pastes, coatings, etc.)
 Polybutene, EMAWET®, NA Solvent™
- Functional polymers**
 (for lamps, air ducts and other automotive parts, bathtubs, etc.)
 MODIPER®, NOFALLOY®
- Electronic materials**
 (for LCD panels of PCs and smartphones, coatings, etc.)
 NOFCURE®, NOFTAC®

Contribute to social issues

Expectations for naturally-derived products in response to tighter environmental regulations



Unlike mineral oils, which do not decompose naturally, the materials used by NOF are biodegradable, naturally-derived oils and fats. Even if lubricants leak from rotating parts of machines, environmental pollution can be prevented, so demand for naturally-derived oils for ships and wind power generation is expected to increase in the future. The usage of functional material products is expected to increase due to growing demand for products such as polymer surfactants for condensers in response to the shift to EVs, and alternative CFC refrigerants caused by increased need for air conditioners due to global warming.

Faster speed and larger capacity in communications and the shift to EVs make development of new products an urgent task



We are working on the development of curing agents for low-dielectric materials for substrate material resins in preparation for faster speeds and larger capacity in communications. Further, the increase in the number and size of displays accompanying the shift to EVs is expected to increase demand for products in the display field, in addition to protective films for LCD color filters. For electronic materials, we will also focus on market development in East Asia, including China, Taiwan, and South Korea.

Functional Chemicals segment

Metal Coatings business

We will respond to rapidly growing demand centered on the EV and renewable energy markets.

Business strengths

- Contributing to the corrosion protection of automotive parts in Japan and overseas
- Also used in railways, buildings, and wind power generation equipment
- Creating a global standard for corrosion protection through global expansion

Operating Officers
Group Head of the Metal Coatings Group

Kuniaki Tsuruoka



We have been offering materials to prevent rusting mainly on metal parts, centered on automotive parts, as well as joints of buildings, parts fastening railways, and other such parts. In our mainstay automotive market, we will work to expand sales by capturing new demand that is changing amid the ongoing shift to EVs. In the non-automotive market, one of our targets is wind power generation and solar photovoltaic (solar PV) in the growing renewable energy field. In particular, offshore wind power generation, whose develop-

ment is rapidly expanding in China and elsewhere in East Asia, is expected to make extensive use of anti-corrosive coatings, including for the use of bolts to fasten rotating blades and anchors that are buried in the seabed. We will respond to the rapidly growing demand by consolidating the technologies where our Group companies have strengths.

The strength of our metal coatings business lies in the global locations of our manufacturing and sales bases, and we are building a strong

network. By further strengthening this global supply chain, we aim to improve productivity and capture market needs.

In addition, as environmental regulations become increasingly strict, we will also contribute to solving sustainability issues to reduce impact on the global environment by leveraging Group synergies in the development of new products that reduce CO₂ emissions and eliminate and reduce the use of hazardous substances.

Functional Chemicals segment

Main products and uses

- Corrosion protection of automotive parts
- Corrosion protection of solar power generation facilities
- Corrosion protection of wind power generation facilities
- Corrosion protection of railway parts

GEOMET®, GEOMET PLUS®



Contribute to social issues

Differentiation through waterborne anti-corrosion coatings that reduce environmental impact



Unlike “solvent-based anti-corrosion coatings” offered by competitors in Europe and the United States, NOF’s products are characterized by the fact that they are “waterborne anti-corrosion coatings.” As the need to reduce environmental impact increases, expectations for eco-friendly GEOMET® have been increasing.

Aiming to reduce energy consumption by lowering the temperature in the curing process



Because the use of anti-corrosive coatings requires a manufacturing process that involves curing at temperatures of 300°C or higher, we have been studying the development of low-temperature curing type products to reduce greenhouse gas emissions. By developing anti-corrosive coatings that can be cured at lower temperatures, we can reduce the energy consumption, such as electricity and gas, required for the process.