

Create New Products and Technologies

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Continually Taking on New Challenges as We Reinforce Fundamental Technologies to Generate Innovation

In 1951, we began our compound business with the goal of commercializing technologies for processing polyvinyl chloride (PVC) resin, something we had been working on at RIKEN, the Institute of Physical and Chemical Research. When we began, we were truly a venture company, using small-scale equipment of 9-inch rolls to produce 3 to 4 tons each month. After acquiring formulations technologies, we began working on downstream businesses to increase the added value we offered. We used the technologies we developed to move into the rigid resin field with our calendaring films and into the soft resin field with our wraps for food packaging. These became our primary business segments. In the late 1990s, dioxin issues led to PVC-bashing. We saw this as an opportunity to take on new challenges, and expanded our elastomer compound business as a substitute for flexible PVC.

Our three fundamental types of technologies are “formula design technology,” “mixing and kneading technology,” and “Film manufacturing and processing technology.” We believe that getting back to basics and thoroughly embodying “the spirit of manufacturing” is important, so we have defined a technology policy of “reinforcing fundamental technologies to generate innovation.”



R&D Structure

Since 2020, we have sought to enrich our R&D efforts from a hardware perspective through efforts such as improving the environment of our R&D Center. To further deepen our compound and film technologies, we carried out a Building 3 renovation of the R&D Center (Tokyo) with the aim of conducting full-fledged R&D operations through Buildings 1, 2, and 3. We installed film testing equipment in Building 3 and put in place a structure that would enable us to make films and sheets of the compounds we developed and to perform sample work.

In FY2023, we completed a pilot line in Building 2 for new thermoplastic vulcanizate (TPV) production which includes kneading machines for developing TPV compounds that can serve as rubber substitutes. Our goal is to promote the shift from rubbers to TPV compounds. We also plan to launch rubber sheet substitutes made with rubber substitute compounds developed in-house. We will use this pilot line to further advance our production technologies and carry out research aimed at deploying actual equipment in the future.

Formula Design Technology

Product lifecycles are growing shorter and shorter, and customer demands are growing more diverse and complex. To further accelerate our product development and achieve greater formula design efficiency and speed by performing data-driven R&D, we have introduced materials informatics (MI) and begun putting it into operation. In the future, we will also enrich our process efforts so that we can make fuller use of the hardware we have deployed.

Quality Control Technology

We work tirelessly to maintain an appropriate level of quality. This begins with managing the chemical substances of raw materials, so we have put in place a structure for performing quality inspections based on customer demands. We also perform visual checks of products and test the physical properties of products in various ways. We rigorously manage each process to maintain appropriate quality levels.

Analysis Technology

Our advanced structural analysis technologies are essential for product development. We use state-of-the-art analysis equipment to perform material analysis and conduct studies to make future improvements.

Collaboration with External Parties

As part of our open innovation, we carry out joint research with outside R&D organizations. For example, we began working together with the University of Tokyo in joint research into lamination methods for graphene, which has drawn a great deal of attention as a next-generation semiconductor material.

Intellectual Property Strategies

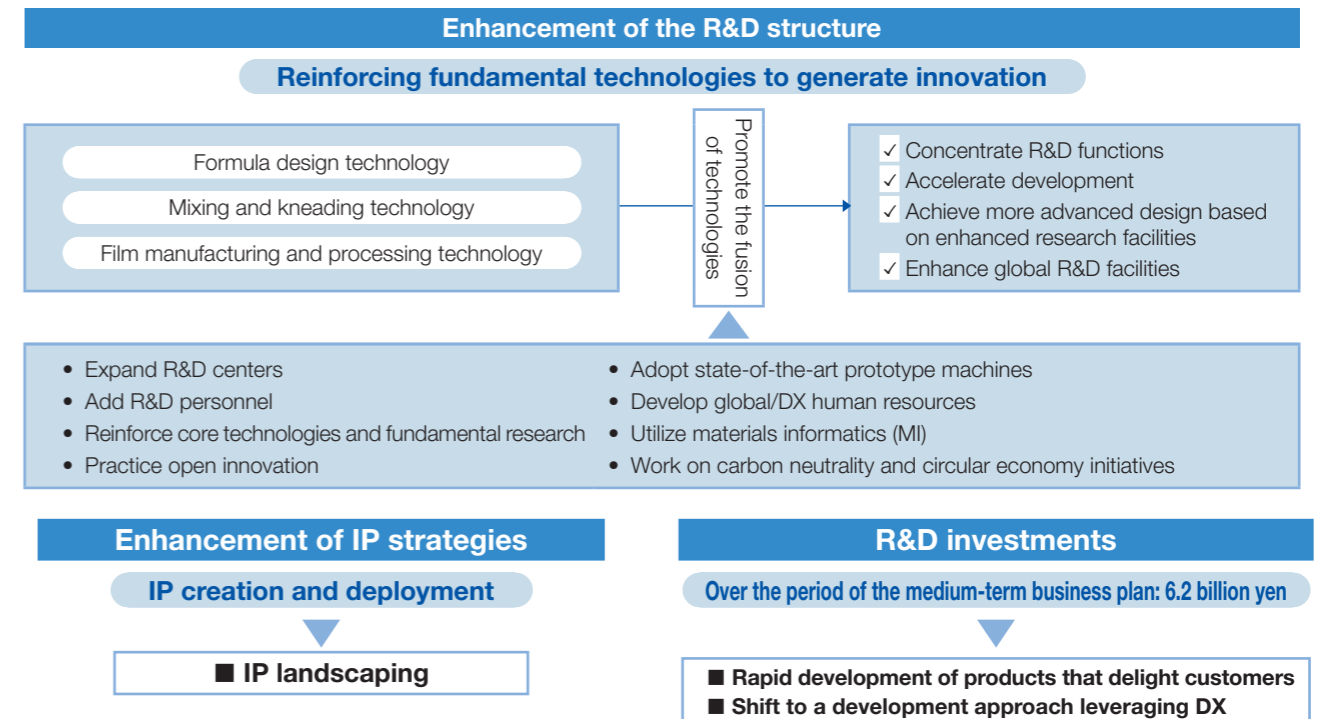
To respond to the recent changes in society, it is vital to leverage intellectual property perspectives in management strategies. We are taking inventory of and visualizing the intangible assets we have accrued through the years to create an environment in which intellectual property is easier to use. We are implementing measures that will facilitate the strategic use of our intellectual property.

Product Development Policies

Significant changes in the market are expected due to the transition to a decarbonized society. The environment surrounding plastics is creating a demand for profound transformation, so in 2019, we developed the biomass plastic RIKEBIO®, followed by a new series, Natural RIKEBIO®, containing natural materials (used tea leaves, husks, shells, and the like) in 2022. We are working with our customers to develop applications and establishing a track record with these products.

Together with expanding the sales of RIKEBIO®, another major issue going forward will be to increase the use of

thermoplastic elastomer (TPE), whose production consumes less energy than synthetic rubber and dramatically reduces CO₂ emissions, as a substitute for synthetic rubber. We do not see these environmental issues as simply being constraints, but also as opportunities for taking on challenges that can be turned to our advantage. No matter how environmentally friendly a material might be, it cannot reduce environmental load if it is not used. We carry out development with a focus on making products useful and reasonably priced for customers so that even more customers will choose them.



Comments from Researcher

Ayako Masuda
Film Group, Core Technology R&D Department

I work in the Core Technology R&D Department, which was established in April 2022, constantly exploring elemental technologies related to film products and coming up with new functional proposals. As an engineer, I am involved in all kinds of processes, from film manufacturing to coating. It is an environment that provides me with countless opportunities for learning and growth. Our development style utilizes information processing technologies, primarily materials informatics. I am enjoying working to enable future development operations that are even more efficient and involve even less wasted labor. I will continue to take on new challenges and work to produce creative new products.

