

Polymer Solutions



Message from the Division Head

Japan's petrochemistry industry is facing a major transition period that occurs once in 30 years for the transformation to a sustainable and growing industry, while facing the increased production of ethylene in China and carbon neutral investments demands. Companies are striving to achieve high added-values, and momentum for collaboration and restructuring is accelerating. Under the industrial "crustal change," The Polymer Solutions Division will undertake sweeping structural reform to achieve a sustainable business. Denka's unique feature is that we operate the entire styrene chain, from the raw material styrene monomers to the downstream food packaging.

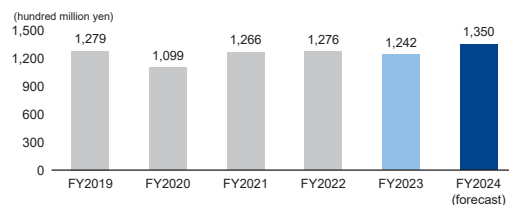
Kei Hara

Executive Officer
Head of Polymer Solutions

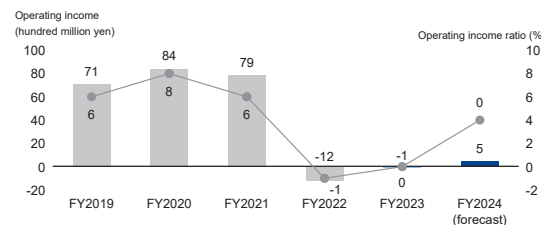
In addition, a polystyrene chemical recycle plant started operation from March 2024, which made us a leading company to promote circular economy in Japan. We are thinking of a reformation design to utilize the advantage to have most of our production sites in metropolitan Chiba area, the biggest area of domestic demand.

Adding to it, our top priorities in 2024 includes: price correction, cost reduction, maximized sales (sales target portfolio revision, new customer development, and sweeping structural reform.)

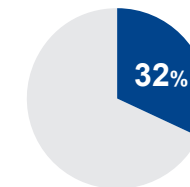
Net sales trends



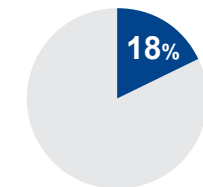
Trends in Operating income/operating income ratio



Percentage in overall net sales (FY2023)



Percentage of employees to overall net sales (FY2023)



To achieve the "Mission 2030" management plan targets

Areas of focus and markets

Automotive Energy industry Housing and home appliances
Food packaging materials Cosmetics and hair products

[Key products]

- High performance styrene based resins (MS, IP, ABS)
- Special additives for oil and gas field drilling, building materials, etc. (Poval)
- Construction materials, flexible air conditioning materials
Gutters, aluminum ducts (Denka Astec)
- High performance styrene based resins (Clear Alene, MS, AS)
- Oil-resistant, heat-resistant, high-strength thin sheets (BOPS)
- Functional barrier sheets
- Raw yarn for wigs and hairpieces (Toyokalon)

[2023 results]

- The chemical recycle plant started operation in March 2024. (Toyo Styrene Co., Ltd., Denka)
- Acquire International Sustainable Carbon Certification "ISCC PLUS Certification"
- Start marketing Dual Light, heat-resistant and oil-proof BOPS with high microwave resistant characteristics
- Release of high volume and good-in-touch raw yarn, suitable for the mainstream items (three-strand braid style)

[2026 plan]

- Forecast the trend in the petrochemistry industry, aiming at optimization of management structure with alliances in the relevant businesses in mind
 - (1) Structural reform in the styrene chain business
 - (2) ROIC improvement
 - (3) Response to geopolitical risks
 - (4) DX promotion
 - (5) New business creation
 - (6) Promotion of a circular economy

[Divisional vision (ideal form in 2030)]

- Portfolio transformation:
Improving corporate value through portfolio transformation, increasing added value, new business creation, and alliance building
- Sustainable&Disruptive Innovation:
Create new three-star businesses through:
Innovation utilizing the styrene chain and Denka's elemental technologies and Innovation through M&A and the utilization of external resources
- Ahead to green:
 - Styrene chemical recycling
 - Promotion of environmental products
 - Establish circular economy models from upstream to downstream through collaboration with local communities

SWOT analysis

- An integrated manufacturing and marketing system that encompasses a range of styrene-based operations from the production of raw materials to the manufacture of processed products
- Development of plastic resins and processed products in a way that accommodates growing needs for eco-friendly solutions
- Global business capabilities backed by a two-location production system comprising of bases in Japan and Singapore
- A diverse range of resin processing technologies, including those associated with polymer structure design and control and the production of sheets, films, and synthetic fiber
- Synergies arising from the combination of materials and processed products as well as solution proposal and development capabilities supported by such synergies

Strengths

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- Development of plastic resins and processed products in a way that accommodates growing needs for eco-friendly solutions
- Establishment of a comprehensive recycling system that takes full advantage of the strengths afforded by our integrated production system, extending from raw materials to processed products, and thereby meeting demand arising from the growing trend towards resource recycling
- Versatile expansion stemming from our diverse product lineup
- Operation of a polystyrene chemical recycle demonstration plant for social implementation

Opportunities

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Weaknesses

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- Change in the global supply-demand balances
- Time lag between fluctuations in the prices of raw materials (e.g. naphtha and benzene) and product price revisions reflecting these external conditions

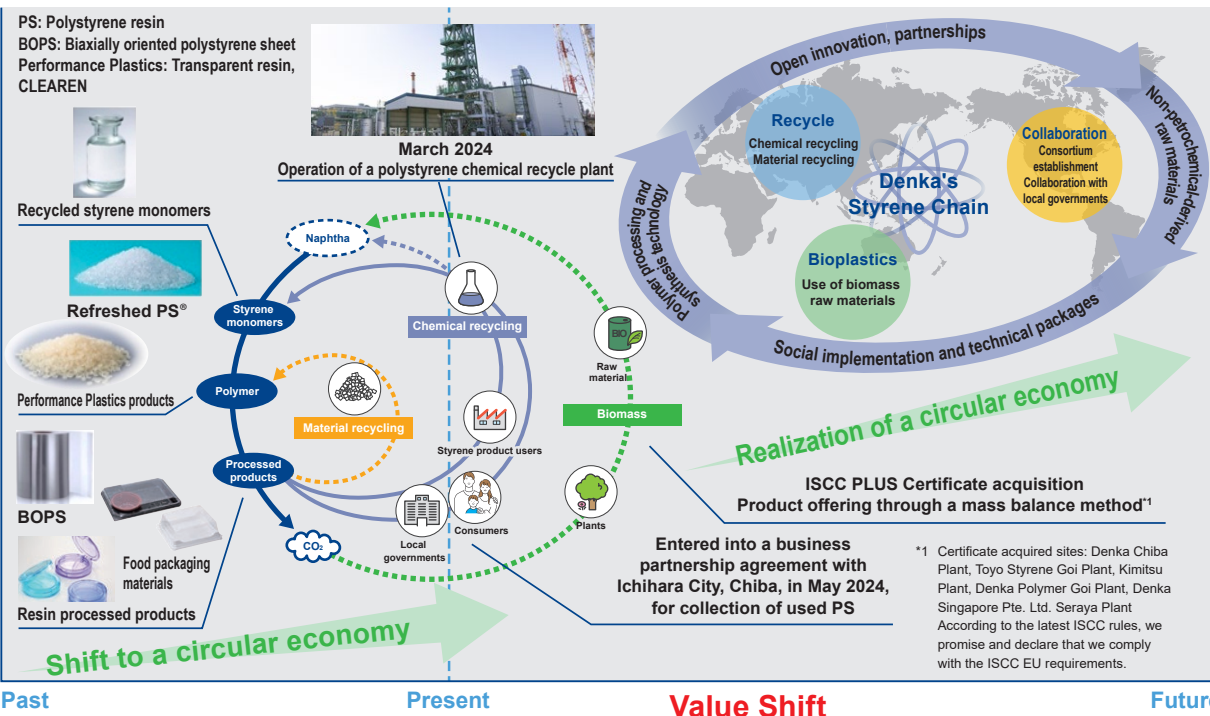
Threats

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- A decline in the need for plastic due to environmental problems induced by waste plastics (especially single-packaging containers)
- Intensification of price competition in step with the improvement in the quality of products manufactured by overseas competitors
- Unstable procurement of various raw materials (due to rises in costs, the abolishment of certain materials, etc.)
- Restructuring of the petrochemistry industry at a global scale

Value shift across polymer solutions

Material/Process Innovation



Contributing to society through business

The Denka Group provide new values by leveraging the characteristics of the styrene chain and achieving a circular economy.

As an essential material for rich social lives, our styrene resins including polystyrene are used for various applications, such as food packaging materials, transparent resin products for cosmetics containers, and LCD TV. However, requirements for polystyrene are getting stricter as the environmental issues calls people's attention, such as issues of plastics in the oceans and demand for a carbon neutral society. To address this, Denka and Toyo Styrene, an affiliate accounted for under the equity method decided to collaborate to operate a chemical recycle plant based on the common idea that establishing a new recycle system to recycle resources is necessary. In March 2024, a polystyrene chemical recycle plant started its operation.

It is a new initiative to collect used containers including food packaging materials (post-consumer materials) and remnant materials (post-industrial materials) generated from sheet and container production plants (processes), decompose chemically, recycle as raw materials for plastic products. It is positioned as the first step towards a circular economy.

As a part of this initiative, we entered a business partnership agreement with Ichihara City Chiba Prefecture, to contribute to achievement of a circular economy and development of local communities.

In addition, Denka, Toyo Styrene, and Denka Polymer acquired ISCC PLUS Certificates for their styrene chain, enhancing the effectiveness of our initiatives.

[Future movement]

We have focused on development and marketing of styrene resin products, utilizing Denka's material characteristics at the maximum extent. While utilizing the fundamental technologies we have developed so far, we will strive to achieve a circular economy and move forward to the future with all stakeholders, by promoting development of environmentally friendly products and social implementation of recycling technologies.