

PETROCHEMICAL BUSINESS



President, Representative Director, Chief Executive Officer
Maruzen Petrochemical Co., Ltd.

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As the international market expands with population growth, we will make the most of our competitive advantage in petrochemical products.

Business Overview

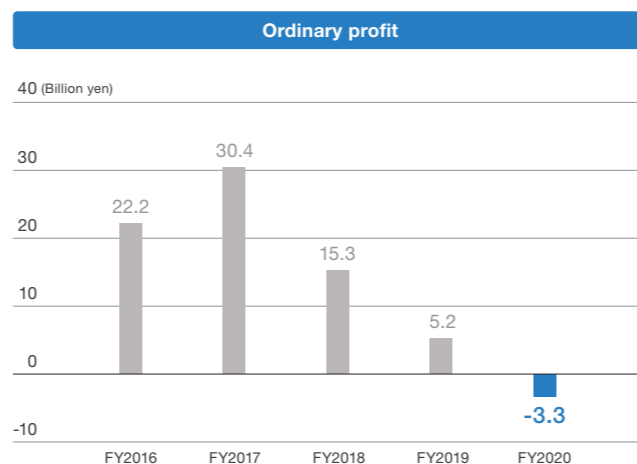
In the petrochemical business, Maruzen Petrochemical, a group company, provides a stable supply of petrochemical products as an ethylene center in the petrochemical complex. In addition, Hyundai Cosmo Petrochemical (HCP), a joint venture with Hyundai Oilbank (HDO), supplies competitive petrochemical products with its Asia-leading para-xylene manufacturing facility.

FY2020 Results and FY2021 Forecasts

In FY2020, ordinary profit decreased ¥8.5 billion year on year, to an ordinary loss of ¥3.3 billion, due to the deterioration of para-xylene market conditions, a decline in sales volume attributed to regular maintenance at Maruzen Petrochemical in the first quarter, and the posting of naphtha that was accepted in the previous fiscal year.

In FY2021, we expect operating profit to increase ¥5.8 billion year on year, to ¥2.5 billion, due to the absence of the decrease in production volumes caused by regular maintenance at Maruzen Petrochemical in the previous year and the elimination of the impact of the naphtha acceptance mentioned above.

In addition, in an initiative promoting synergy with the Petroleum Business, a production facility for hydrogenated petroleum resins is scheduled to begin commercial operation in FY2021 at Chiba Arkon Production, a three-company joint venture involving Arakawa Chemical Industries.



Ordinary profit

FY2020 results	¥-3.3 billion (Down ¥8.5 billion from the previous year)
FY2021 forecast	¥2.5 billion (Up ¥5.8 billion from the previous year)



Identified risks

- Risks related to petrochemical product prices and demand
- Relaxation of supply and demand resulting from new construction/expansion of overseas plants
- Another wave of infection and market fluctuations due to COVID-19 variants



Opportunities

- Global increase in the demand for petrochemical products resulting from a recovery from the COVID-19 pandemic and the increase of the population
- Long-term growth in semiconductor demand
- Acceleration of the global move towards decarbonization



Strengths

- World-leading market share in polymers used in semiconductor photoresists
- Promotion of synergy with the Petroleum Business
- Largest ethylene production capacity in Japan and integrated supply chain
- Increased competitiveness of para-xylene manufacturing facilities enabled by energy conservation and investment increasing production capacity



COVID-19 impact and response

- Impact**
- Decline of demand for some products due to the COVID-19 pandemic
- Response**
- Recommending that departments where such workstyles are possible work from home
 - Having commuters measure their body temperatures, wear masks, disinfect hands, and avoid the 3C's (closed spaces, crowded places, and close-contact settings)

Business strategy

We recognize the following risks in our business environment: A global decline in product prices stemming from the deterioration of the petrochemical product supply-demand balance, the expansion of supply due to new construction/expansion of overseas plants, and market fluctuations resulting from another wave of infection due to COVID-19 variants.

On the other hand, opportunities in the business environment include a global increase in demand for petrochemical products associated with a recovery from the COVID-19 pandemic and population growth in China, India, and other countries, the increase of demand for specialty chemicals associated with the long-term increase of demand for semiconductors, and the acceleration of the

global move towards decarbonization.

The Group's strengths in the field of specialty chemicals enables it to have a world-leading market share in polymers for semiconductor photoresists. We are also advancing a collaborative project to increase the synergy with the Petroleum Business. Further, Maruzen Petrochemical and Keiyo Ethylene together as a single plant have the largest ethylene production capacity in Japan. Our ethylene plant has an integrated supply chain through the pipeline from the naphtha raw material to petrochemical production and sales. Hyundai Cosmo Petrochemical conducted construction at its large-scale para-xylene plant to increase production capacity.

Competitive advantages 1 Continued acceleration of specialty chemical initiatives

The semiconductor market is forecast to grow at an annual rate of 8% to 10%. At present, semiconductor demand is brisk and has been growing at a high rate due to the promotion of teleworking and progress in computerization in response to the COVID-19 pandemic. Demand for PCs and smartphones remains high, and investing in data center has resumed, boosting the markets for 5G and IoT products. Taiwan Semiconductor Manufacturing Co., Ltd. (TSMC) plans to start commercial production of its leading-edge 3 nm process nodes in the second half of FY2022. Further, TSMC has also announced its plan to complete a 2 nm process node test production line. Moves like these will continue towards greater miniaturization and higher integration of semiconductors.

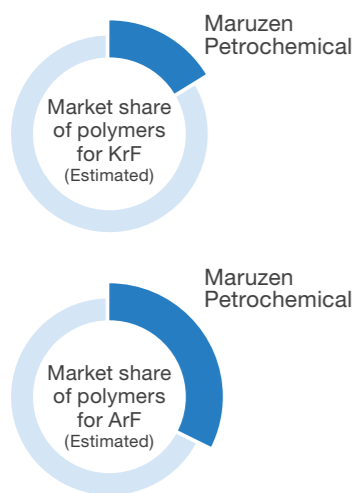
In this environment, Maruzen Petrochemical is expanding our specialty chemical business and manufacturing polymers for photoresists, which are materials for semiconductors. We position this as one of our growth businesses. At present, we boast a world-class market share in polymers for KrF photoresists and ArF photoresists. We are also proactive in the manufacturing and development of leading-edge polymers for EUV photoresists. In FY2020, sales of our polymers used in semiconductor photoresists increased 19% year on year. Thus, we were able to take advantage of the ongoing growth of demand. To catch up with the market growth that is expected to continue, we will formulate appropriate investment plans and address the continuing miniaturization and increasing integration of semiconductors, including our response to the development of

leading-edge 3 nm process nodes. Our polymers for photoresists are made-to-order products. We expect to demonstrate our competitive advantages to maintain stable growth by fulfilling the high customer quality requirements and the customer requests to increase production volume. For this purpose, we will make the appropriate capital investments, increase staff, and take other measures to promote strong supply chain management. To give a specific example, to respond to growing demand for polymers for EUV photoresists, we are planning to secure a clean environment space that is needed to develop polymers for EUV photoresists and introduce advanced analytical instruments at our existing research center.

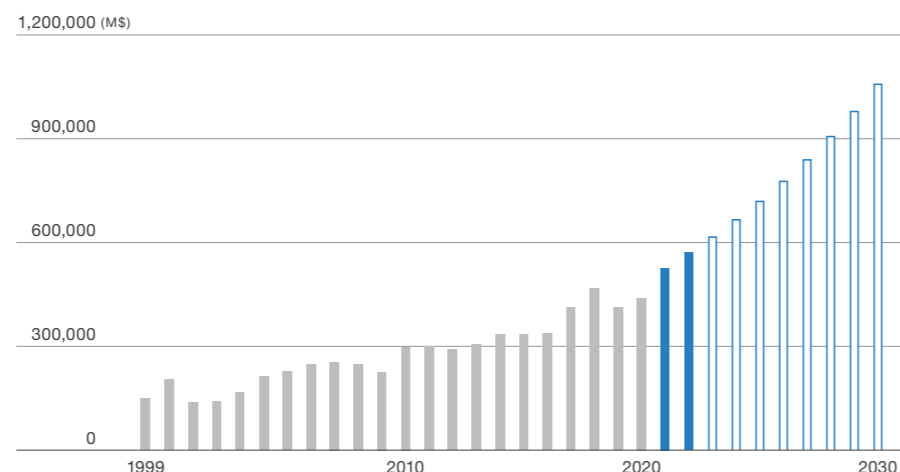


ICP-MS (raw material and polymer product analyzer)

Global market shares in polymers used in semiconductor photoresists



Global semiconductor market forecast



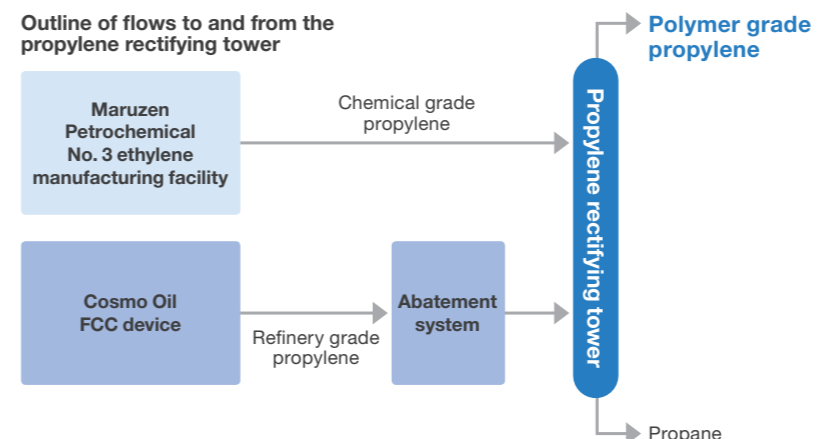
Created by the Cosmo Oil Group in reference to World Semiconductor Trade Statistics

Competitive advantages 2 Synergy with the Petroleum Business

Construction of a new propylene rectifying tower with Cosmo Oil

Maruzen Petrochemical and Cosmo Oil are constructing a propylene rectifying tower as an initiative to produce synergy between the two companies. The tower is scheduled to be completed in the second half of FY2021. This device will enable the high purification of chemical grade propylene (CGP), which is manufactured at the ethylene plants of Maruzen Petrochemical, and refinery grade propylene (RGP), which is a by-product from the fluid catalytic cracking (FCC) device owned by Cosmo Oil

Chiba Refinery, into polymer-grade propylene (PGP). The new propylene rectifying tower is expected to increase the purity and added value of the two companies' propylene. In addition to the above, we are advancing collaborations between the Petroleum Business and Petrochemical Business in various fields, including the accommodation of unused fractions and utilities, optimization using integrated linear programming (LP), and research synergy.



Propylene rectifying tower

Production of hydrogenated petroleum resins at Chiba Arkon Production

Chiba Arkon Production, a joint venture between Maruzen Petrochemical, Cosmo Energy Holdings, and Arakawa Chemical Industries, is scheduled to begin the commercial operation of a production facility for hydrogenated petroleum resins in FY2021. Hot-melt adhesives (HMA) for hygiene products, which are used for the assembly of diapers and other products, are a high-growth field. Demand for hydrogenated petroleum resins in this field is expected to grow at a rate of approx. 7% from FY2021 and onwards. The C9 series of hydrogenated petroleum resins from Chiba Arkon Production have greater performance than competitors' products. They are more compatible with many elastomers and more effectively improve adhesiveness. We expect that they will be used as adhesives for products other than hygiene products and for polymer modification as well.



Production facility for hydrogenated petroleum resins