



Petrochemicals & Plastics

Provide Customers with New Solutions Based on High Value-added Products

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Primary Focus SDGs



Business Activities

Sumitomo Chemical's Petrochemicals & Plastics Sector manufactures such products as polyethylene (PE), polypropylene (PP), and methyl methacrylate (MMA) using the various strengths of its manufacturing locations in Japan, Singapore, and Saudi Arabia, and offers them to a wide variety of industries, including automobiles, electric appliances, and food products.

Core Competence

We are developing high value-added products in anticipation of customer needs, and we also provide a stable supply of high-quality products at our locations in Japan and Singapore. Our relationships of trust with core customers in the Asian market, cultivated over many years, are also a major strength of Sumitomo Chemical. In Saudi Arabia, we are manufacturing cost-competitive products, taking advantage of the low prices of raw materials and fuel in that region.

Basic Strategy

Currently, we are working to enhance our ability to offer solutions through high value-added products in Japan and Singapore and to achieve stable plant operations in Saudi Arabia.

Initiatives in Fiscal 2019

The Phase 2 plant in Rabigh, Saudi Arabia, started commercial operations. Meanwhile, we promoted our licensing business, including our business supplying catalysts, by expanding catalyst production capacity at Chiba Works, and concluding a license agreement with an Indian state-owned petroleum company for our propylene oxide manufacturing technology.

Issues in the Future

Continuing stable operations at the plant in Rabigh, Saudi Arabia, including in the phase 2 section, remains an important challenge for us. We are developing high value-added uses of polyolefin in Japan and Singapore, and strengthening our license business. Furthermore, we are working on R&D on carbon cycle chemistry, including chemical recycling, for a sustainable society.

Long-term Vision

Going forward, Sumitomo Chemical will not only continue to enhance our strengths in these three locations, but will also aim to consistently achieve a return on assets in excess of our cost of capital by working to streamline assets, including working capital.

Corporate Business Plan for FY2019-FY2021

Action Plan	Major Issues	Corporate Business Plan for FY2019-FY2021: Sector Goals FY2021 Target		
		FY2019	In Comparison to FY2018	
(Billions of yen)				
<ul style="list-style-type: none"> Strengthen domestic business Expand capacity and enhance profitability of Singapore business Maintain stable operations at PRC phase I and make PRC phase II into a business that constantly contributes to the sector's performance Strengthen technology licensing business 	<ul style="list-style-type: none"> Restructuring of underperforming businesses R&D into carbon cycle chemistry, including carbon capture and utilization technologies, to create a sustainable society 	Sales revenue	656.9	-100.6
		Core operating income	14.5	-47.1
		Sales revenue of SSS*-designated products	80.6	+8.6
				88.0

* Sumika Sustainable Solutions

SWOT Analyses of the Major Businesses

- Global operation by leveraging the competitive advantages of the three bases in Japan, Singapore, and Saudi Arabia
- Strong relations with prominent customers in the Asian market
- Access to low-cost ethane feedstock
- Capabilities to develop high value-added products



- Relatively small business size compared to the global majors
- Dependence on naphtha, a more expensive feedstock than ethane / shale gas

- Large and deep markets
- Steady growth in demand
- Increasing demand for chemical recycling, prompted by heightened awareness of sustainability

- Establishment of more cost-competitive new plants
- Cyclical business environment
- Country risks

Product Introduction

■ Polyolefin Business [Polyethylene, Polypropylene]

Polyethylene	This synthetic resin is flexible and highly water- and chemical-resistant, while also being easy to process. It is widely used in packaging materials, including plastic wrap and food-safe tube products, and films in applications such as wire coatings and greenhouses.
Polypropylene	This synthetic resin has many superior properties including light weight, great workability, durability, heat resistance, and chemical resistance. It is widely used in applications such as automobile bumpers, instrument panels, food trays, and home appliances.



Products made using polyethylene

■ Methyl Methacrylate (MMA) Business [MMA Monomer, MMA Polymer, MMA Sheets]

MMA polymer	We manufacture and market MMA polymer with superb transparency and weather resistance. It is a superb material for a variety of uses, including optical components such as light guide plates for LED TVs, automotive components, showcases, and outdoor advertisements.
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A large aquarium tank made using MMA

Market Environment and Strategy for Major Businesses

■ Polyolefin Business

Sumitomo Chemical has production sites for polyethylene (PE) and polypropylene (PP) in Japan, Singapore, and Saudi Arabia. Its global production capacity for PE is 1.66 million tons/year, and for PP, 1.68 million tons/year. Global demand is estimated to be about 100 million tons/year for PE, and 70 million tons/year for PP. For both PE and PP, growth at an annual rate of 4% is expected. We aim to further boost profitability in our PE business by expanding sales in high value-added uses, including protective film for liquid crystal displays and water-resistant laminate for paper. We are enhancing our PP business for high value-added uses, including PP compounds for automotive components, electronic components, and film materials for food packaging.

■ MMA Business

Global demand for MMA monomer is estimated to be about 3.7 million tons/year, growing at an annual rate of 3 to 4%.

Sumitomo Chemical, as a leading Asian manufacturer of MMA, is continuing to strengthen the competitiveness of its entire MMA product chain ranging from monomer and polymer to the sheet business.

■ License Business

Sumitomo Chemical focuses on licensing out the manufacturing methods and technologies that it has cultivated to date in its own plants in Japan and at overseas affiliates. In addition to PP and propylene oxide (PO), the company's product lineup includes a process for the oxidation of hydrochloric acid, which can dramatically save energy and recycle byproducts into raw materials, and a process for producing caprolactam, which does not produce ammonium sulfate as a byproduct. The Company aims to secure stable profit on an ongoing basis by selling catalysts along with licenses.

Value Creation Model: Rabigh Project

System for Providing Added Value

Major Management Resources (Input)

Natural Capital	Cost-competitive ethane from Saudi Aramco
Social and Relationship Capital	Good relations with the Saudi Arabian government built over many years
Human Capital	The operational skills of local staff have improved in recent years
Manufacturing Capital	A world-scale integrated oil refinery and petrochemical complex



Operations at Petro Rabigh

Value Chain

Supplier
Saudi Aramco

Petro Rabigh

Competitive Advantages of Rabigh Project

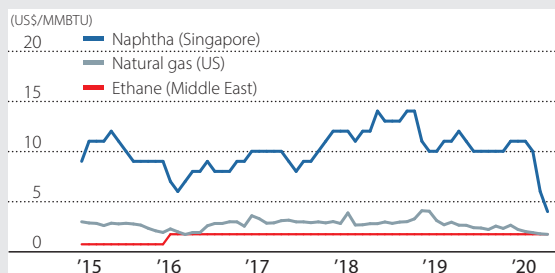
Competitive Conditions in the Market

Because the field of petrochemical products is extremely broad, connected with the necessities of life – food, clothing, and shelter – the market is incredibly vast, with massive numbers of players. Petro Rabigh's ethylene production capacity is 1.6 million tons per year.

Competitive Advantages

Among a large number of players, Petro Rabigh has outstanding cost competitiveness compared to other companies using naphtha as a feedstock by sourcing cost-competitive ethane from Saudi Aramco for its major feedstock. In addition, because it is a world-scale integrated complex, the company has a low unit cost as another competitive advantage.

Cost Difference of Petrochemical Feedstocks



Major Processes Generating Competitive Advantages

Production: Petro Rabigh produces products such as PP, PE, and PO, using technology licenses from Sumitomo Chemical, which boasts world-class technology. Moreover, the local staff's operational technique is improving dramatically by receiving training at overseas facilities, particularly in Singapore.

Sales: Sumitomo Chemical Asia has taken on the role of supplying products produced by Petro Rabigh in Saudi Arabia to countries across Asia. The company has shortened delivery times and reduced logistics costs by establishing stocking points throughout Asia.

Earnings Structure and Role in Driving Income

The margins for petrochemical products change depending on the supply and demand balance for each of the various products. On the other hand, because the prices for ethane feedstock are fixed, margins for petrochemical products produced at Petro Rabigh expand when product prices increase, compared with companies that use naphtha as a feedstock. In order to increase the profitability of Petro Rabigh, the company is endeavoring to continue safe and stable operations. In addition, the Phase II plant has begun production of all its products, and we are working to achieve stable operations, with the aim of contributing to earnings as soon as possible.

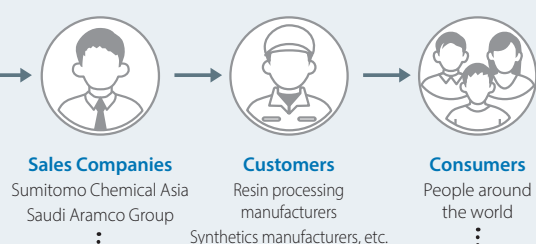
Added Value Provided to Society



Contributing to Reducing Environmental Impact by Using Cutting-Edge Technology in Plants

Sumitomo Chemical has raised “contribution to reducing environmental impact” as one of the material issues to be addressed as management priorities. Petro Rabigh uses the propylene oxide-only (PO-only) process for manufacturing PO. This technology does not create byproducts, and is an innovative ecofriendly process that has enabled effective use of heat and limited wastewater creation. Compared with the conventional process, the PO-only process reduces CO₂ emissions by 300 thousand tons/year for annual PO production (200 thousand tons/year). We use energy and resources efficiently throughout the plant with this type of cutting-edge technology, and thereby contribute to reducing environmental impact.

Petro Rabigh produces a variety of petroleum and petrochemical products using crude oil and cost-competitive ethane from Saudi Aramco as its primary feedstocks.



Customer and Consumer Needs

There are cases when customers in regions in Asia and the Middle East have to maintain a significant amount of inventory because there is a risk of difficulty in procuring petrochemical products due to unstable logistic arrangements in this region. Moreover, in cases when customers switch suppliers, it is a burden on customers to adjust the products' processing methods used in customer factories. For these reasons, customers demand accurate and stable product deliveries.

Providing Customer Value

Sumitomo Chemical Asia, which sells products from Petro Rabigh, offers more reliable product deliveries than the competition, as well as short delivery times, because it has warehouses in locations near its customers. This means it is able to provide a stable supply, and to earn a high degree of trust from customers. In addition, while it has the flexibility to change a certain volume of sales and customers according to market conditions in each region, by focusing more on continued sales to core customers, the company further increases the reliability of its stable supply. Through these efforts, Sumitomo Chemical Asia is working to build long-term relationships with customers.