



TOSOH

Tosoh Corporation

General Presentation



Delivering on our promise of quality products
through *The Chemistry of Innovation*.



At A Glance

7th among Japanese
chemical producers¹

3
core areas

- ❖ Basic Chemicals
- ❖ Petrochemicals
- ❖ Specialty Materials

Net sales in fiscal 2019
US\$7.8 billion

¥110.9 = US\$1 ended at March 31, 2019

Since 1935, Tosoh Corporation has built a resilient global enterprise whose products and services are woven into the fabric of modern life.

Values based on *monozukuri*, a craftsman-like approach to product detail and quality, have shaped Tosoh's growth for more than 80 years.

46th among global
chemical producers¹

105 group companies
worldwide

12,995 people

Source: C&EN's Global Top 50 Chemical Producers of 2018
¹Ranked by net sales ^{**} Eight Japanese manufacturers are ranked in top 50



Tosoh All Around You



In Homes



In Phones



In Teeth



In Food and Drinks



In Sportswear



In Cars

Tosoh furnishes the raw materials for a wide array of products that help make modern life all that it is and all that it can be.

It is almost impossible to find a manufactured item that does not include something from Tosoh.

And we continually strive to offer products that contribute to improving the quality of people's lives.



History

Started from humble beginnings as a soda plant and grew to become one of the largest independent fully-integrated comprehensive chemical manufacturers in Japan.

1935

Founding of Toyo Soda Manufacturing Co., Ltd.



Established its first chemical plant producing soda ash and caustic soda in Shunan, Yamaguchi (Nanyo Complex)

1970s

Expanded to become a fully integrated chemical manufacturer through a series of mergers in Japan



Started operations at its second manufacturing complex in Yokkaichi, Mie in 1971 (Yokkaichi Complex)
1975: Merged with Tekkosha Co., Ltd.

Changed official company name to Tosoh Corporation in 1987

1980s

Focused on growth of its three main businesses: commodity, petrochemical and specialty operations

1990s

Expanded bases in Japan and abroad to grow businesses



1990: Merged with Shin-Daikyo (petrochemical company)

Further strengthen and stabilize business operations through leveraging commodity and specialty business pillars

2000s

Prioritized businesses for stable growth, solid financial foundation and safe operations

2014: Merged with Nippon Polyurethane Industry Co., Ltd.

Two Business Pillars

Tosoh balances petrochemicals, urethanes and isocyanates, and one of the largest chlor-alkali commodity operations in Asia on the one hand with highly profitable specialty operations on the other hand to build a business portfolio that can withstand changes in the business environment.

Tosoh's Commodity businesses ensure basic cash flow and business profitability, and fuel Tosoh products with highly competitive utilities and basic raw materials.

Commodity

- ❖ Olefins
- ❖ Polyethylene
- ❖ Chlor-alkali
- ❖ Urethanes
- ❖ Cement

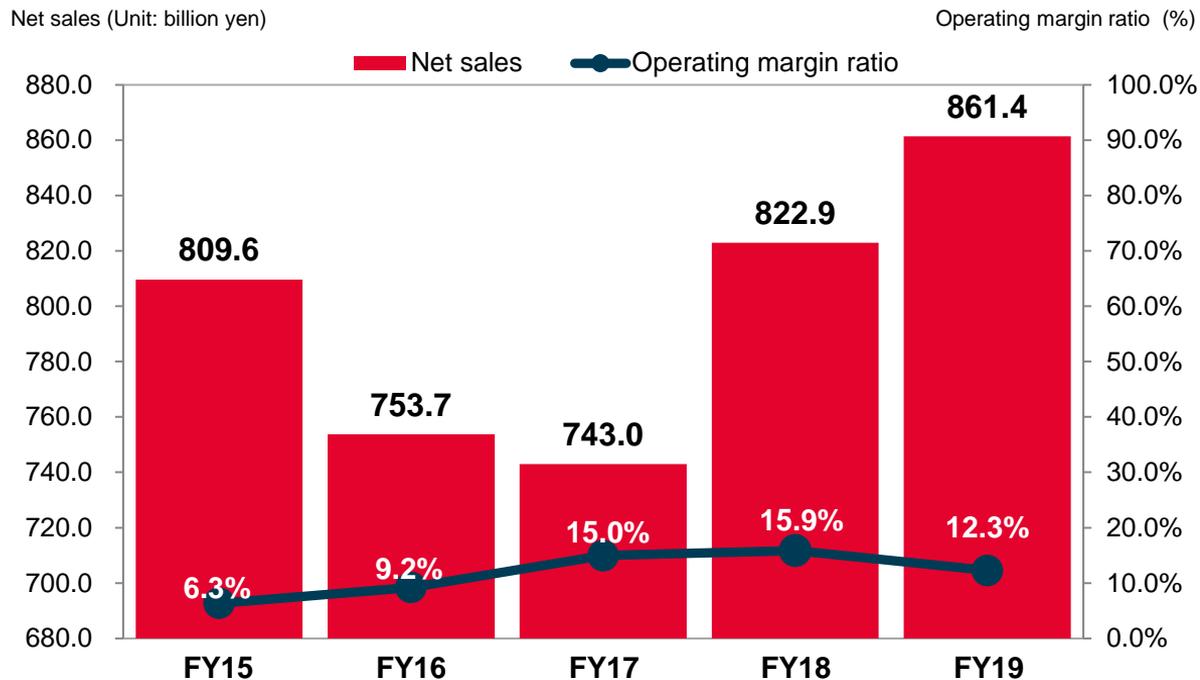
Specialty

- ❖ Functional Polymers
- ❖ Organic Chemicals
- ❖ Bioscience
- ❖ Advanced Materials

Tosoh's Specialty businesses reduce the company's exposure to risk from fluctuations in the Commodity pillar by generating stable and high profit margins through the sales of high-performance products developed through rigorous research and development with our customers.



Financials



Culture of Safety

Strong commitment to promoting and ensuring safety throughout all levels of the organization

Tosoh Corporation ensures the safe handling, transport and storage of our products as well as safe operation of our plants through the implementation of a comprehensive and stringent set of safety strategies that are designed to minimize safety hazards and optimize production efficiencies. We also work closely with suppliers and group companies to promote safety through a proactive coordination of business activities.





Trusted Global Brand



Nanyo Complex, Yamaguchi,
Japan
Approx. 3 million m²
The largest single manufacturing
complex in Japan

#1

World's leading supplier of chlorosulfonated polyethylene, a superior general-purpose synthetic rubber used in a myriad of applications.

#1

World's largest supplier of zirconia powder that is widely used in a wide range of applications.

#1

Japan's leading supplier of high-quality and reliable chromatographic columns for separations and purification.

#1

Japan's top supplier of caustic soda, a highly versatile substance used in a variety of manufacturing processes

#1

Japan's top supplier of vinyl chloride monomer, which is an essential ingredient to produce polyvinyl chloride.

#1

Japan's sole supplier of bromine, which is essential for the manufacture of flame retardants, dyes, pharmaceuticals, etc.



Yokkaichi Complex, Mie, Japan
Approx. 1.1 million m²
The main base for our petrochemical businesses



Business Groups

Petrochemical Group

High-performing specialty products for a wide range of industries

Net sales: US\$3.0 billion
Share of net sales: 39.2%

Olefins
Polymers

Chlor-alkali Group

High-quality commodities from one of Asia's largest integrated chemical manufacturers

Net sales: US\$1.6 billion
Share of net sales: 21.3%

Chlor-alkali
Urethane
Cement

Specialty Group

Strongly positioned and highly profitable products in well-established and growing markets

Net sales: US\$1.8 billion
Share of net sales: 22.9%

Organic Chemicals
Bioscience
Advanced Materials

Engineering Group

Environmental-related services, including water treatment, soil purification and remediation, and construction

Net sales: US\$892 million
Share of net sales: 11.5%

Water Treatment
Construction

Ancillary

Services for Tosoh Group companies, that enhance operational efficiency and performance

Net sales: US\$395 million
Share of net sales: 5.1%

General Services
Information Technology
Logistics



Petrochemical Group



Olefins

Ethylene
Propylene
C4 Fraction
Tertiary-butyl alcohol
Cumene
Aromatic compounds, BTX
(benzene, toluene, xylene)

**Providing a variety of
high-quality
petrochemical products
from our very own
naphtha cracker**

Tosoh furnishes an array of petrochemicals that contribute heavily to the electronics, automobile and other industries. Ethylene, one of Tosoh's core products, is a basic feedstock for a vast array of other products that go into such uses as films in packaging, flexible water pipes, coating cables, cosmetics etc.



Petrochemical Group

Polymers

High-density polyethylene (HDPE)
Low-density polyethylene (LDPE)
Linear low-density polyethylene (LLDPE)
Ethylene vinyl acetate (EVA) copolymer
Adhesive polymer
PVC paste (Ryuron[®])
Polychloroprene rubber (Skyprene[®])
Chlorosulfonated polyethylene (CSM) (TOSO-CSM[®])
Alkylated CSM (extos[®])
Polyphenylene sulfide (PPS) resins
C₉ hydrocarbon resins

**Offering a balanced mix
of commodity and
specialty polymer
products that furnishes
the world we live in**

Tosoh's polyvinyl chloride products are in your home's easy-to-clean wallpaper, on the outside in durable siding, and even in your car's underbody.



Chlor-alkali Group

Chlor-alkali Division

Caustic soda

Vinyl chloride monomer (VCM)

Calcium hypochlorite (Niclon®)

Polyvinyl chloride (PVC)

Sodium bicarbonate

**Supplying the world
with the materials that
help make modern life
comfortable**

Tosoh supplies essential products that go into plastics, glass, pulp and paper, aluminum, and soaps and detergents. Our resins are used in almost everything from refrigerators to mixing bowls and utensils; our caustic soda keeps clothes clean; and our Niclon® calcium hypochlorite makes drinking water potable and swimming pools safe for swimming.



Chlor-alkali Group

Urethane Division

Isocyanate raw materials and functional urethanes

Methylene diphenyl diisocyanate (MDI) / (Millionate®)

Toluene diisocyanate (TDI) / (Coronate®)

Hexamethylene diisocyanate (HDI)

Polyurethane adhesives (Woodcure® and Pearlthane®)

Coating resins

Elastomers (Miractran®)

Polyisocyanates for polyurethane paints

Polyols

Offering a broad range of polyurethane products that present limitless possibilities of applications in today's society

Tosoh's polyurethane products contribute to the manufacture of essential products such as car seats to keep your children safe on the road as well as refrigeration insulation to keep your food fresh.



Chlor-alkali Group

Cement

Ordinary portland cement

Portland fly ash cement

Portland blast furnace slag cement

Contributing to the building of sustainable cities and communities

Tosoh cement goes into buildings, bridges, and highways. And the recycling capacity of our cement plant helps significantly reduce the waste produced by Tosoh and communities surrounding the plant.



Specialty Group

Organic Chemicals

Ethyleneamines

Polyurethane catalysts (TEDA, TOYOCAT[®],
RZETA[®])

Bromine and hydrobromic acid

Flame retardants (FLAMECUT[®])

Chelating agents (TS-300, TX-10)

Nonaqueous solvents (HC series)

Sodium p-styrene sulfonate (Spinomar[®] NaSS)

High-purity ethylene dichloride

**Producing a wide array
of basic building block
chemicals to make the
products that support
modern living**

Tosoh's chelating agents help to remove harmful heavy metals from the environment while our ethyleneamines are ubiquitous and found in myriad applications from pharmaceutical to agricultural. Tosoh's low-emission producing polyurethane catalyst RZETA also contributes to keeping your children safe on the road.



Specialty Group

Bioscience

- Automated immunoassay analyzers (AIA[®], AIA-CL series)
- Reagent systems (AIA-PACK[®], AIA-CLPACK[®])
- Automated glycohemoglobin (GHb) analyzers (HLC[®] series)
- Real-time fluorescence monitoring systems (TRC[®] series)
- High-performance liquid chromatography (HPLC) columns (TSKgel[®] and ToyoScreen[®] series)
- Separation media for bio-pharmaceutical purification (Toyopearl[®])
- High-performance gel permeation chromatography (GPC) Systems (EcoSEC[®] Elite series)
- Multi-Angle Light Scattering (MALS) detector (LenS³ series)

Supporting society's health and well-being with a broad range of advanced life science products

Tosoh produces a range of scientific and clinical diagnostics products that address the health concerns of developed and developing countries.



Specialty Group

Advanced Materials

Yttria-stabilized zirconia powders & compounds (TZ and Zpex[®] series)

Grinding media (YTZ[®])

Zirconia fine beads

Electrolytic manganese dioxide (EMD)

Synthetic zeolites for molecular sieves (Zeolum[®])

High-silica zeolites for catalysts (HSZ[®] series)

Silica glass raw materials

Fabricated quartzware

Machined quartzware

Sputtering targets for thin-film deposition

Manufacturing high-precision and advanced materials for technologies that help shape and move tomorrow's world

Tosoh's quartzware and sputtering targets are on the cutting-edge in helping the world's leading semiconductor manufacturers succeed in advancing our way of life. Our "ceramic steel" zirconia plays a role in dental and decorative applications. And our battery materials keep our devices and vehicles powered to take us to the next level.



Engineering Group

Water Treatment

(Organo Corporation)

Water treatment systems and products

Construction

(Tohoku Denki Tekko Co., Ltd., etc.)

Construction of machinery, plant, steel structure, environmental and sanitation

facilities, containers

Electrical machinery

Instrumentation

Civil engineering

Maintenance and quality assurance

**Sustaining today's
society with solutions
for clean water and
safe structures**

Tosoh subsidiary Organo Corporation, since 1946, supplies water treatment systems that support waterworks, sewage treatment pharmaceuticals and even information technology and electronics sectors.





Research & Development

990 researchers
16.6 billion yen investment

R&D Themes

Life Science

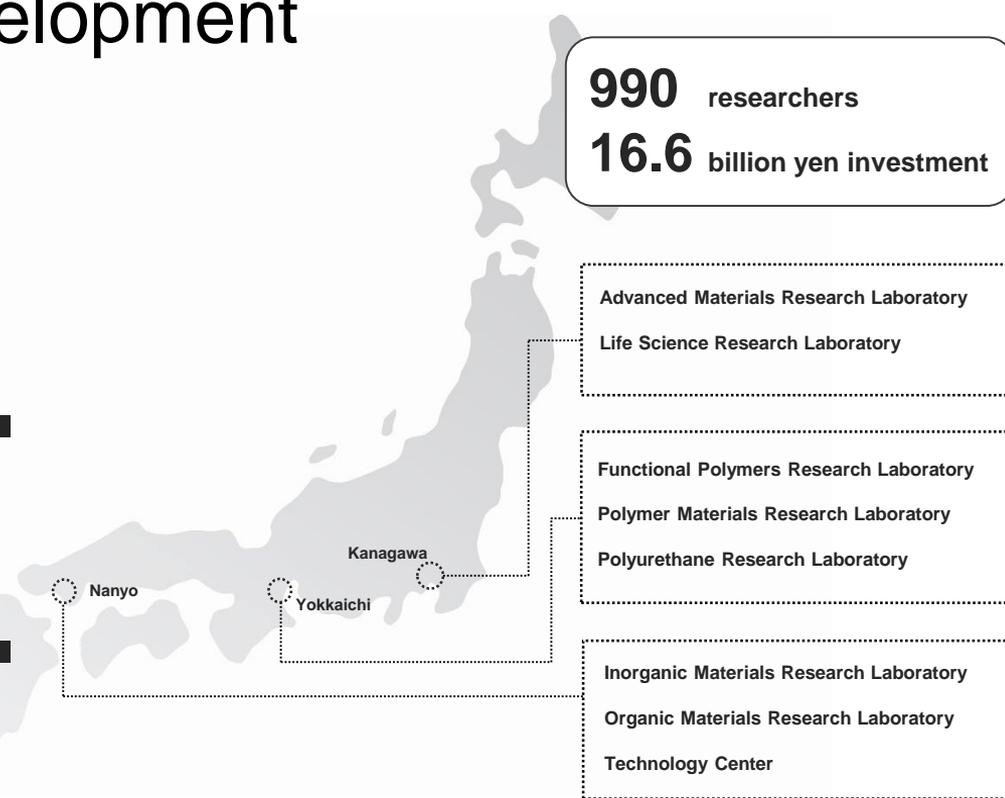
Develop products and technologies to expand separations and diagnostics businesses.

Electronic Materials

Generate new electronic materials that take full advantage of organic compounds and polymer design technologies, and acquire advanced and performance measurement technologies through group companies, industry, academia and government collaboration.

Environment & Energy

Develop innovative products and technologies toward achieving a low-carbon society and generate new materials to powder metallurgy technologies and organometallic complexes.



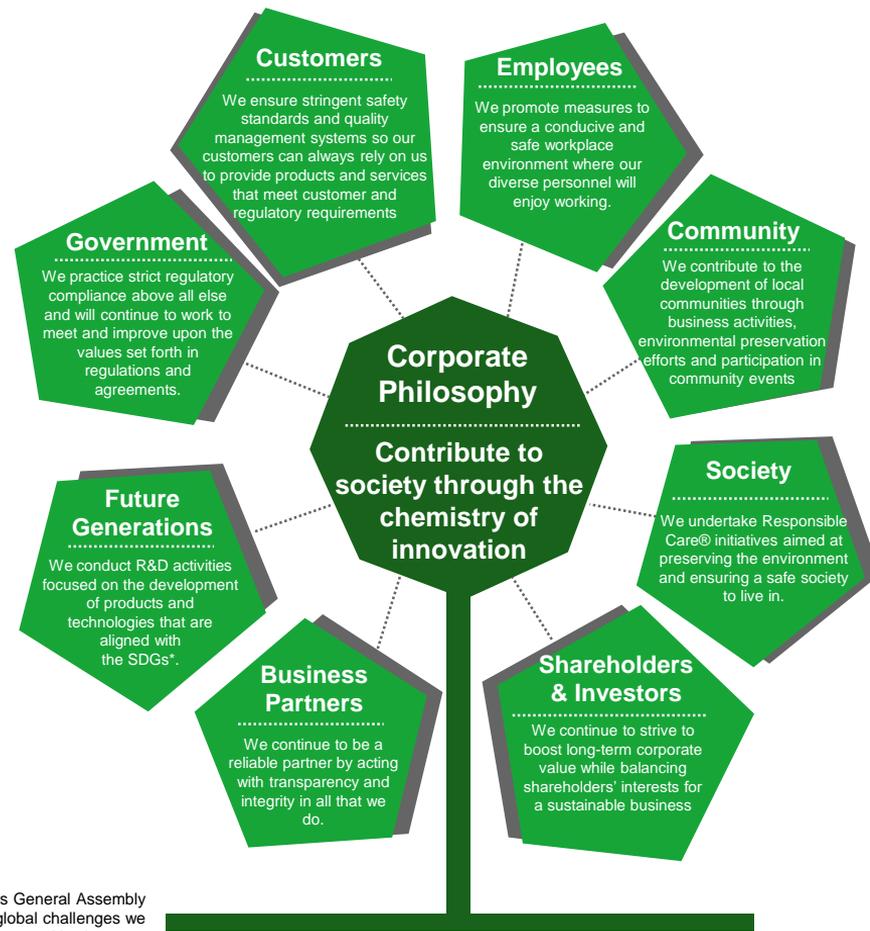


Sustainability

Making Sustainability and Corporate Social Responsibility a Part of Our Business Foundation

Tosoh Corporation recognizes the role chemical companies play in solving societal issues and realizing a sustainable society. We are committed to improving the quality of life through environmental preservation, to ensuring the safety and health of employees and society, and to achieving economic progress.

We pledge to continue to make our presence known as a chemical company that is actively doing its part to support the sustainable growth of society.



*The Sustainable Development Goals (SDG) are a collection of 17 global goals set by the United Nations General Assembly in 2015. They are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice.



Global Presence

North America

- ▲ Tosoh America, Inc.
- Tosoh Bioscience, Inc.
- Tosoh Bioscience LLC
- Tosoh Quartz, Inc.
- Tosoh SMD, Inc.
- Tosoh Specialty Chemicals USA, Inc.
- ▲ Tosoh USA, Inc.

Europe

- ▲ Tosoh Europe N.V.
- Tosoh Bioscience, A.G.
- Tosoh Bioscience GmbH
- Tosoh Bioscience Ltd.
- Tosoh Bioscience SRL
- ▲ Tosoh Europe B.V.
- Tosoh Europe B.V. (SMD)
- Tosoh International N.V. (incl. Dubai branch)
- Tosoh Hellas A.I.C.
- Tosoh Quartz (UK)
- Delamine B.V.

China

- ▲ Tosoh China Holdings Co., Ltd.
- ▲ Tosoh (Shanghai) Co., Ltd.
- Tosoh (Shanghai) Polyurethane Co., Ltd.
- Tosoh Bioscience (Shanghai) Co., Ltd.
- Tosoh SMD (Shanghai) Co., Ltd.
- Tosoh (Ruian) Polyurethane Co., Ltd.
- Tosoh (Guangzhou) Chemical Industries, Inc.
- ▲ Tosoh Logistics Warehouse Co., Ltd.
- Organo (Suzhou) Water Treatment Co., Ltd.
- Taihei (Shanghai) Co., Ltd.

Japan

- Asia Industry Co., Ltd.
- ▲ Ace Pack Co., Ltd.
- ▲ Hiyoshi Chemical Industries Co., Ltd.
- ▲ Hokuetsu Kasei Co., Ltd.
- ▲ Hosojima Port Cargo Co., Ltd.
- ▲ Hyuga Unyu Co., Ltd.
- Izumi Sangyo Co., Ltd.
- ▲ Kansai Shipping Co., Ltd.
- Tosoh Kasumi Engi, Inc.
- ▲ Kasumi Kyodo Jigyō Co., Ltd.
- ▲ Keiyo Koun Co., Ltd.
- ▲ Koun Marine Co., Ltd.
- ▲ Koun Industry Co., Ltd.
- Lonseal Corporation
- Manac Incorporated
- Minami Kyushu Chemical Industry Co., Ltd.
- ▲ Nihon Kaisui Chemical Co., Ltd.
- Nippon Miractran Co., Ltd.
- Organo Corporation
 - Organo Acty Corporation
 - Organo Eco Tech Corporation
 - Organo Food Tech Corporation
 - Organo Plant Service Corporation
- Plas-Tech Corporation
- ▲ Rensol Co., Ltd.
- Rinkagaku Kogyo Co., Ltd.
- ▲ Sankyo Kasei Industry Corporation
- Sanwa Construction Co., Ltd.
- Seiwakoki Co., Ltd.
- ▲ Shinomura Chemical Industry Corporation
- Taihei Chemicals Limited
- Taiyo Vinyl Corporation
- ▲ Toho Acetylene Co., Ltd.
- ▲ Toho Unyu Co., Ltd.
- ▲ Tohoku Denki Tekko Co., Ltd.
- ▲ Tohoku Tosoh Chemical Co., Ltd.
- ▲ Tohoku Maintenance Co., Ltd.
- Tokuyama Sekisui Co., Ltd.
- Tosoh AIA, Inc.
- ▲ Tosoh Analysis and Research Center Co., Ltd.
- Tosoh Ceramics Co., Ltd.
- Tosoh Finechem Corporation
- ▲ Tosoh General Services Co., Ltd.
- Tosoh Hi-Tec, Inc.
- Tosoh Hyuga Corporation
- ▲ Tosoh Information Systems Co., Ltd.
- ▲ Tosoh Logistics Corporation
- ▲ Tosoh Nikkami Corporation
- Tosoh Quartz Corporation
- Tosoh SGM Corporation
- Tosoh Silica Corporation
- Tosoh Speciality Materials Corporation
- Tosoh Techno-System, Inc.
- Tosoh Zeolum, Inc.
- ▲ Toyo Polymer Co., Ltd.
- ▲ Yamaguchi Koun Corporation
- ▲ Yokkaichi Oxyton Co., Ltd.
- Yorin Construction Co., Ltd.

South America

- ▲ Oriental Marine Corporation

Asia

India

- ▲ Tosoh India Pvt. Ltd.

Indonesia

- PT Lautan Organo Water
- P.T. Standard Toyo Polymer

Korea

- Tosoh SMD Korea, Ltd.

Malaysia

- Tosoh Advanced Materials Sdn. Bhd.
- Organo (Asia) Sdn. Bhd.

Philippines

- Tosoh Polyvin Corporation
- Mabuhay Vinyl Corporation
- ▲ MVC Properties, Inc.
- Philippine Resins Industries, Inc.
- ▲ Philrex Properties, Inc.

Singapore

- ▲ Tosoh Asia Pte. Ltd.

Taiwan

- Tosoh Quartz Co., Ltd.
- Tosoh SMD Taiwan, Ltd.
- Organo Technology Co., Ltd.

Thailand

- Organo (Thailand) Co., Ltd.

- Chlor-alkali
- ▲ Petrochemical
- Advanced Materials
- Bioscience
- Organic Chemicals
- Engineering
- ▲ Ancillary / Holding / Trading Companies



Global Sales and Marketing Offices



North America

- 1 Tosoh USA, Inc.
Grove City, OH, USA
info.tusa@tosoh.com
- 2 Tosoh Specialty
Chemicals USA, Inc.
Alpharetta, GA, USA
info.tscu@tosoh.com

Europe, Middle East and Africa

- 3 Tosoh Europe B.V.
Amsterdam, The Netherlands
info.tse@tosoh.com

Southeast Asia, India

- 4 Tosoh Asia Pte. Ltd.
Singapore
info.tsas@tosoh.com
- 5 Tosoh India Pvt. Ltd.
Mumbai, India
contact@tosohindia.com

China

- 6 Tosoh (Shanghai) Co., Ltd.
info@tosoh.com.cn



Our Promise



Our ability to continuously supply sustainable, precise and quality solutions allows us to be the business partner who can consistently help our customers succeed.

We challenge ourselves constantly to better harmonize our activities with the environment and with our stakeholders in society so that we may become better at fulfilling our role as a global corporate citizen.



TOSOH

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TOSOH

Additional Information



TOSOH

Vinyl Isocyanate Chain

The vinyl isocyanate chain is a fully integrated sequence of manufacturing operations that produce several key chemicals from the vinyl and isocyanate chains respectively.

Vinyl Chain

The vinyl chain starts with salt and naphtha. Salt is electrolyzed to yield chlorine, caustic soda and hydrogen. The naphtha steam cracking process yields ethylene, carbon monoxide and benzene. Chlorine is reacted with ethylene and hydrogen chloride (a by-product of MDI production) to produce ethylene dichloride (EDC), and the balance is used to manufacture other chlorine derivatives. Tosoh then converts EDC—which can also be combined with caustic soda to produce ethyleneamines, another major Tosoh product—to vinyl chloride monomer (VCM), which is converted into various polyvinyl chloride (PVC) resins.

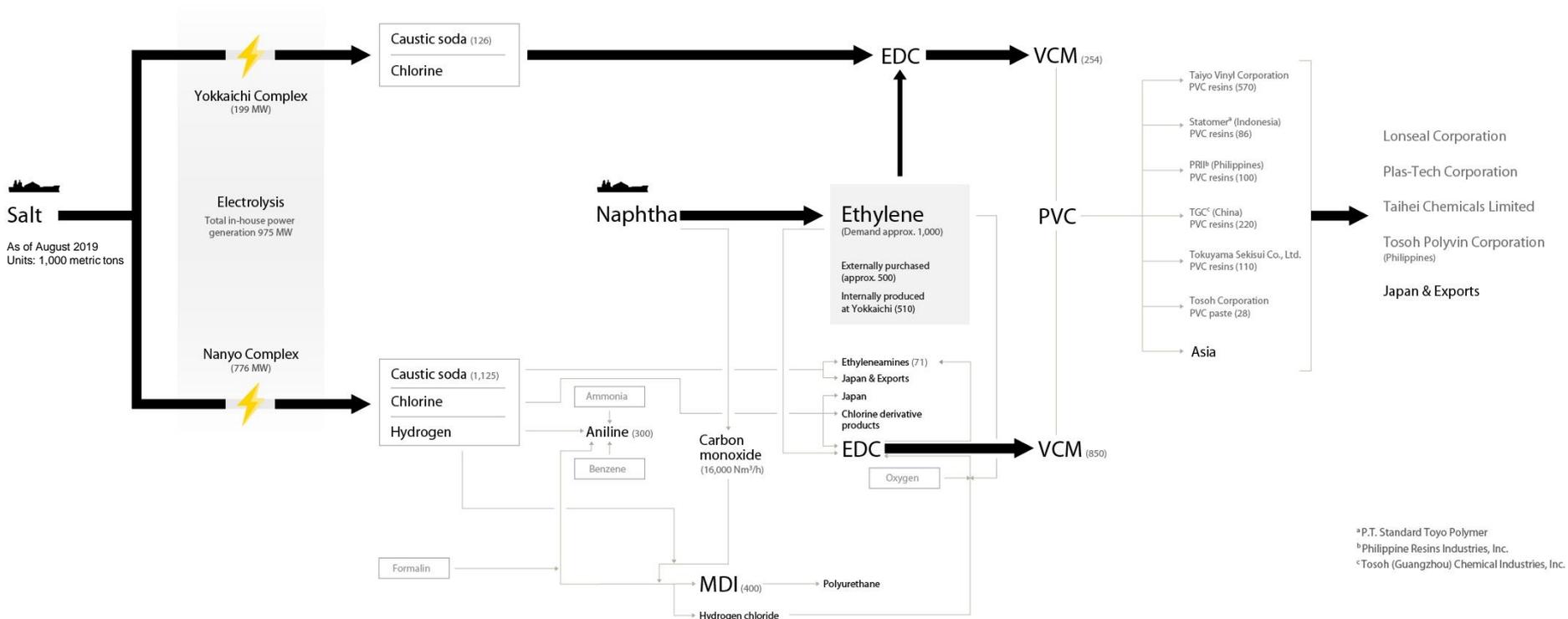
Isocyanate Chain

The naphtha-derived benzene, together with hydrogen and ammonia yields aniline, which, combined with formalin, and the vinyl chain's chlorine and carbon monoxide leads to methylene diphenyl diisocyanate (MDI), an essential raw material for polyurethanes.





Tosoh Fully Integrated Vinyl Isocyanate Chain



As of August 2019
Units: 1,000 metric tons



North America



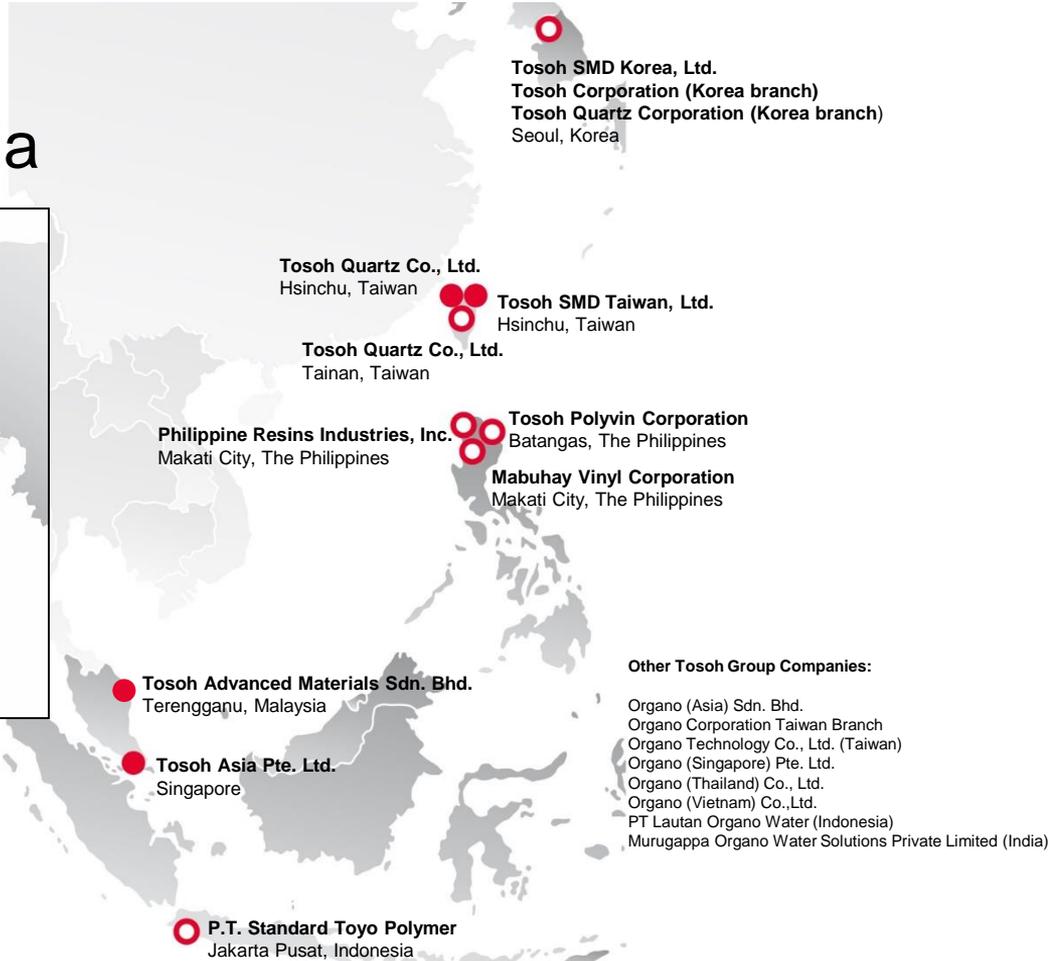
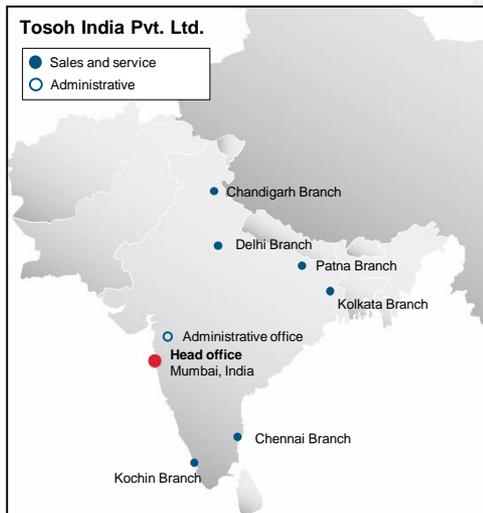


Europe





Southeast Asia





China





Japan

Nanyo Complex

Yamaguchi Prefecture

- Technology Center
- Inorganic Materials Research Laboratory
- Organic Materials Research Laboratory
- Yamaguchi Sales Office
- In-House Power Generation up to 776MW

Fukuoka Branch

Fukuoka Prefecture

Osaka Branch

Osaka Prefecture

Nagoya Branch

Aichi Prefecture

Sendai Branch

Miyagi Prefecture

Tosoh Corporation (Headquarters)

Tokyo

Life Science Research Laboratory

Advanced Materials Research Laboratory

Kanagawa Prefecture

Yokkaichi Complex

Mie Prefecture

- Functional Polymers Research Laboratory
- Polymer Materials Research Laboratory
- Polyurethane Research Laboratory
- In-House Power Generation up to 199 MW



* Only includes main headquarters, sales offices, manufacturing and research facilities



Organization

