



# TOSOH CORPORATION

*The Chemistry of Innovation*



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



**Tosoh Corporation** is a global chemical company that supplies manufacturers with the materials they need to create the products that make modern life all that it is. And everything it can be. We invite you to take a closer look at the wide world of Tosoh.



# Basic Facts

\$7.5 billion sales 1,500 products\* 11,000 people 130 companies



*Our strategy is to balance our commodities and specialties operations to establish a business structure that emphasizes profitability and growth.*

\*Does not include the 10,000-plus parts that go into diagnostic systems.



# Sales Breakdown

FY 2014: US\$7.5 billion



**PETROCHEMICAL**

US\$2.2 billion

28.9%

**CHLOR-ALKALI**

US\$2.8 billion

37.1%

**SPECIALTY**

US\$1.5 billion

19.9%

**ENGINEERING**

US\$666.2 million

8.9%

**OTHER**

US\$394 million

5.2%



# Modern Life

1,500 products



***Look around you, it is almost impossible to find a manufactured item that does not include something from Tosoh.***

*Paper cups, computers, hybrid cars, homes, solar panels, office buildings, highways, communication networks, drinking water, clothes, shoes, pharmaceuticals, printer inks, cell phones, watches. Even, for some people, teeth—made from Tosoh's advanced ceramic, zirconia!*



# Greatest Resource

11,000 people



*Committed to people as the source of its vitality, Tosoh is proud of the multiethnic, multicultural community it has become. Our diversity brings fresh ideas and creativity to all aspects of our business.*



# Group

130 companies 19 countries



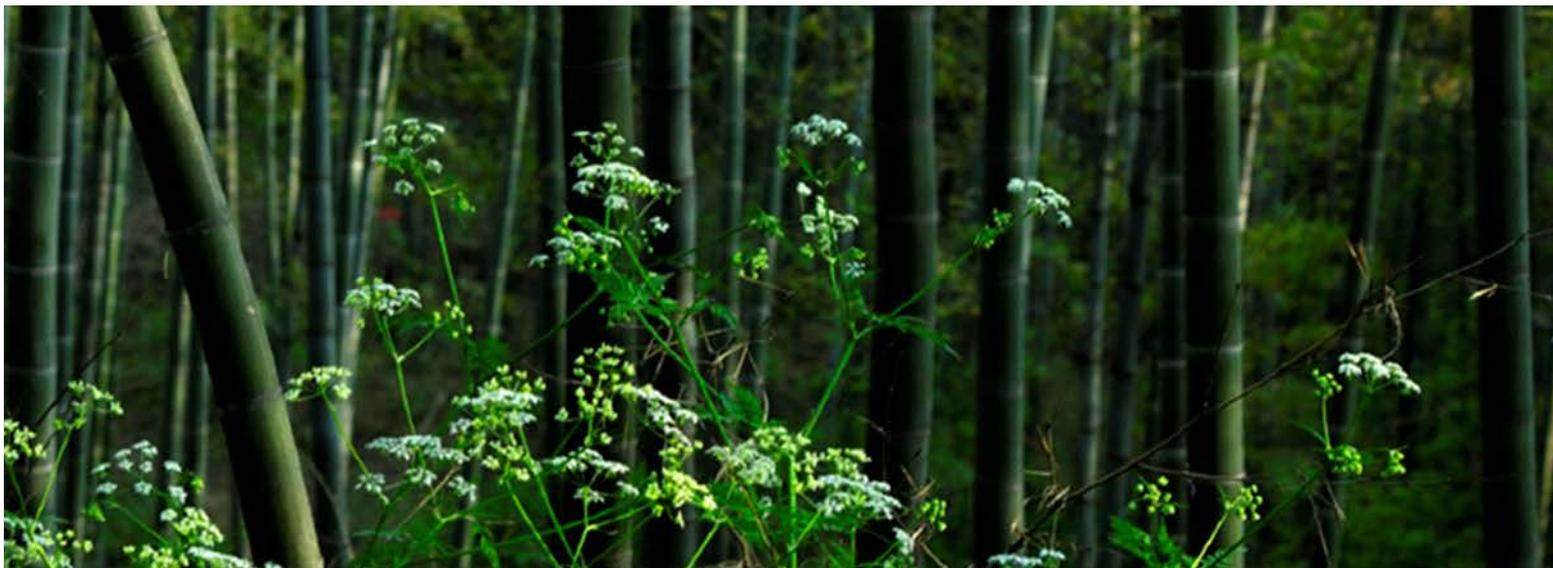
*As we continue to expand globally, our focus remains on creating a corporate culture where people can realize their potential and be a part of the local community.*



# Environment



US\$128 million investment in fiscal 2014



*Tosoh is dedicated to improving the quality of life through environmental preservation, to ensuring the safety and health of its employees and society, and to achieving economic progress.*



# R&D: Exploring New Frontiers

860 people    \$121 million investment



*Through R&D, the Tosoh Group strengthens its businesses and enhances its ability to generate tomorrow's products today. The company combines its own R&D programs with joint research at external research facilities, including at universities and other educational institutions and at public research laboratories.*



# Strengths

## Commodities

Vinyl chain supplies  
growing Asian markets

## Specialties

Serve global  
niche markets



*Tosoh combines the largest chlor-alkali commodity operations of their kind in Asia with highly profitable specialty operations.*



# Products & Markets

*Tosoh serves the chemical and petrochemical, construction, automotive, consumer electronics, information technology, bioscience, and environmental markets.*



## **Chlor-alkali**

Chlor-alkali  
Cement

## **Petrochemicals**

Olefins  
Polymers

## **Specialty**

Organic Chemicals  
Bioscience Products  
Advanced Materials

## **Engineering**

Water Treatment

## Olefins

- Ethylene
- Propylene
- C4 Fraction
- Tertiary-Butyl Alcohol
- Cumene
- Aromatic Compounds



### ***On the Road: A Part of Your Daily Life***

*Tosoh furnishes an array of materials that underpin the electronics, automobile, and plastics industries. Our synthetic rubber helps wet suits insulate wearers from the cold, our engineering plastic polyphenylene sulfide (PPS) strengthens car engine parts, our Melthene polyolefin resin fastens the easy-to-peel lids on yogurt and other food containers, and our Ryuron polyvinyl chloride (PVC) paste puts that soft stretch in rubber gloves.*

## Polymers

Polyvinyl Chloride

High-Density Polyethylene

Low-Density Polyethylene

Linear Low-Density Polyethylene

Ethylene Vinyl Acetate Copolymer

Adhesive Polymer

Polyvinyl Chloride Paste

Polychloroprene Rubber

Chlorosulphonated Polyethylene

Alkylated Chlorosulphonated Polyethylene

Polyphenylene Sulfide (PPS) Resins

C<sub>9</sub> Hydrocarbon Resins



### ***In the Living Room: A Part of Your Daily Life***

*Tosoh is there while you're relaxing in your living room. Our polyvinyl chloride covers the inside of your house with easy to clean wallpaper and the outside with durable siding. It also covers the electrical cords that bring your appliances to life and the solar panels that provide your house with energy.*

## Chlor-alkali

- Caustic Soda
- Vinyl Chloride Monomer
- Calcium Hypochlorite (Nicolon<sup>®</sup>)
- Sodium Bicarbonate
- Polyurethane and Isocyanates
  - Methylene Diphenyl Diisocyanate
  - Toluene Diisocyanate
  - Hexamethylene Diisocyanate
- Polyurethane Adhesives
- Coating Resins
- Elastomers
- Polyisocyanates for Polyurethane Paints
- Polyols



### ***In the Kitchen: A Part of Your Daily Life***

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



# Chlor-alkali

## Cement

Ordinary Portland Cement

Portland Fly Ash Cement

Portland Blast Furnace Slag Cement



### ***For Strong Structures: A Part of Your Daily Life***

*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

## Organic Chemicals

Ethyleneamines

Polyurethane Catalysts (TEDA, TOYOCAT<sup>®</sup>  
RZETA<sup>®</sup>)

Bromine

Hydrobromic Acid

Flame Retardants (110R<sup>®</sup>, 120R<sup>®</sup>, FLAMECUT<sup>®</sup>)

Chelating Agents (TS-300, TX-10)

Nonaqueous Solvents (HC series)

Sodium P-styrene Sulfonate (Spinomar<sup>®</sup> NaSS)

High-purity Ethylene Dichloride



### ***For When You Are Out and About: A Part of Your Daily Life***

*Tosoh provides cutting-edge technologies to the semiconductor, consumer electronics, pharmaceuticals, and medical industries.*



# Specialty

## Bioscience

Automated Random-Access Enzyme Immunoassay Systems

Reagent Systems

Automated Glycohemoglobin Analyzers

Real-Time Fluorescence Monitoring Systems

High-Performance Liquid Chromatography Columns

Separation Media for Bio-pharmaceutical Purification

High-performance Gel Permeation Chromatography(GPC)  
Systems



### ***In Health Care Solutions: A Part of Your Daily Life***

*Tosoh produces a range of diagnostic and medical products that address the health concerns of developed and developing countries.*

## Advanced Materials

Yttria-Stabilized Zirconia Powders & Compounds (TZ and Zpex<sup>®</sup> series)

Grinding Media (YTZ<sup>®</sup>)

Zirconia Fine Beads

Electrolytic Manganese Dioxide (EMD)

Zeolites for Molecular Sieves (Zeolum<sup>®</sup>)

Zeolites for Catalysts (HSZ<sup>®</sup> series)

Silica Glass Materials

Fabricated Quartzware

Machined Quartzware

Sputtering Targets



### ***For Conserving Natural Resources***

*Tosoh is taking steps to ensure its share of the surging market for rechargeable lithium-ion batteries, which conserve energy and are becoming increasingly important value-added components of automobiles and electronic products.*

## Water Treatment (Organo Corporation)

Water Treatment Systems and Products

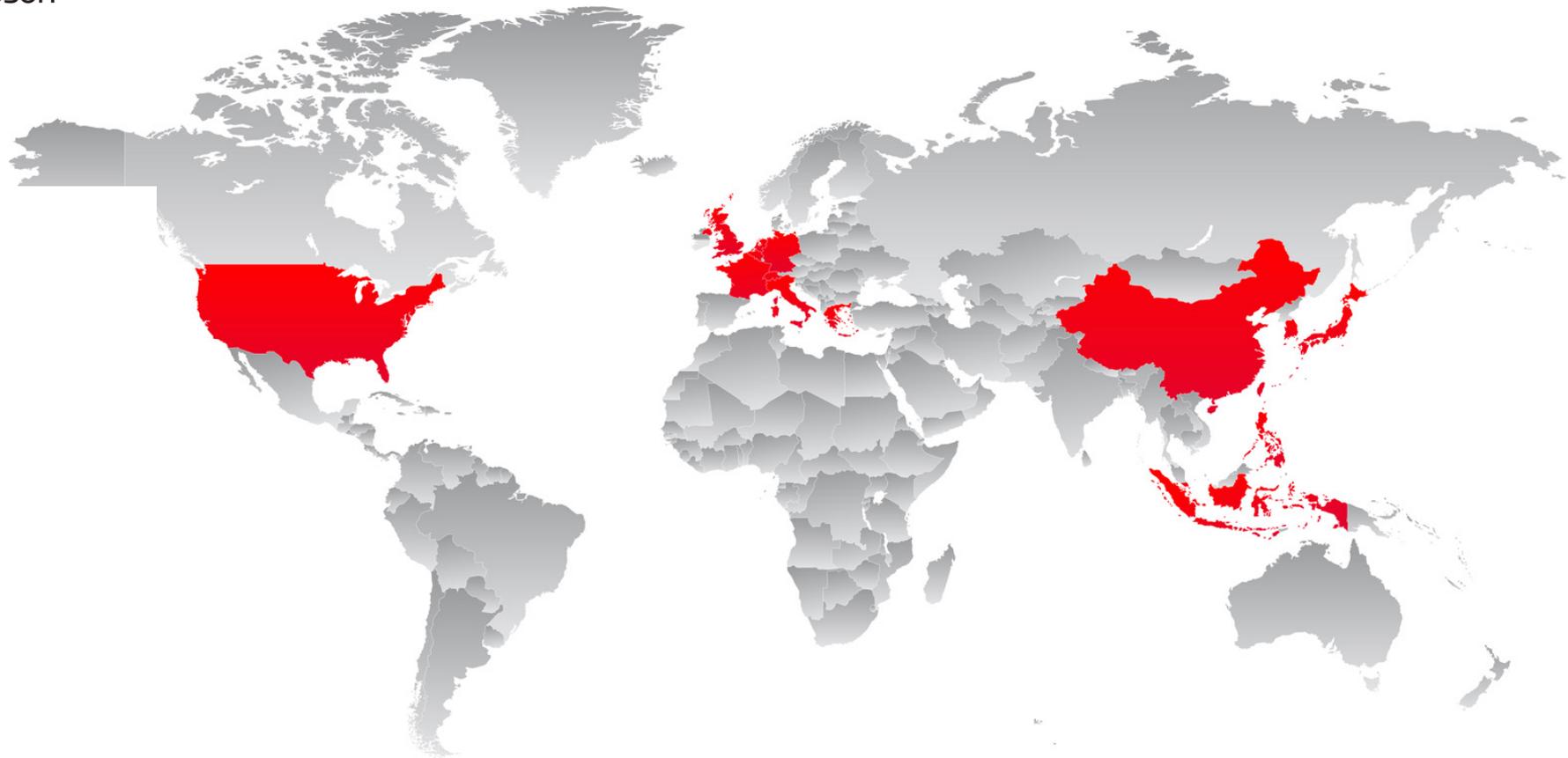


### ***To Keeping Water Pure: A Part of Your Daily Life***

*Tosoh subsidiary Organo Corporation has been an important contributor to progress in industry and daily lives since 1946. Its water treatment systems and products goes into waterworks, sewage treatment plants, power stations, pharmaceuticals manufacturing, food processing operations, information technology and electronics industries.*



# Global Presence



## **Global Solutions**

*Tosoh first ventured overseas almost 50 years ago, establishing a presence in the United States in the early 1960s. Today, the Tosoh Group boasts a global network that generates a major portion of Tosoh's sales outside Japan.*



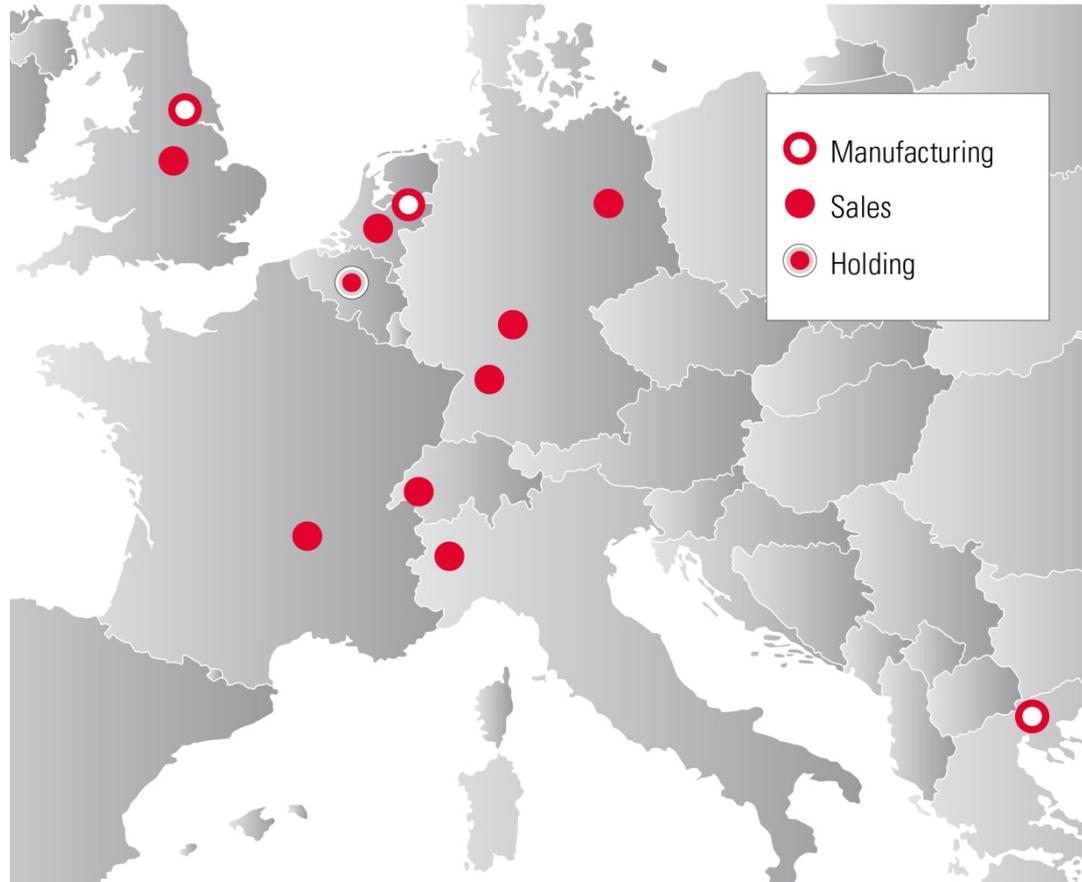
# North America



- Manufacturing
- Sales
- Holding

- **Tosoh America, Inc.**  
Grove City, OH
- **Tosoh Bioscience, Inc.**  
South San Francisco, CA
- **Tosoh Bioscience LLC**  
King of Prussia, PA
- **Tosoh Quartz, Inc.**  
Portland, OR
- **Tosoh SMD, Inc.**  
Grove City, OH
- **Tosoh Specialty Chemicals USA, Inc.**  
Alpharetta, GA
- **Tosoh USA, Inc.**  
Grove City, OH

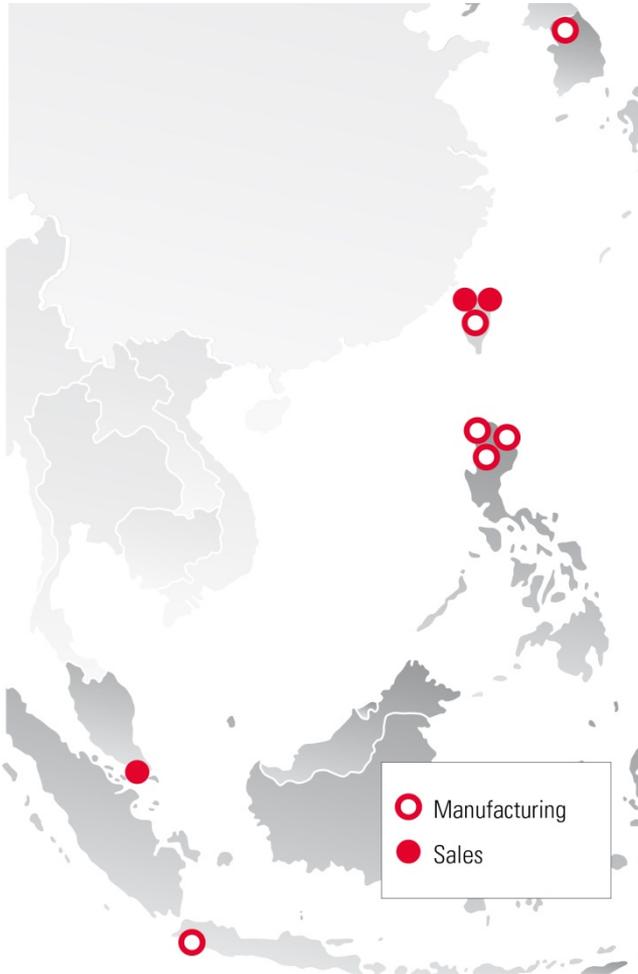
# Europe



- Tosoh Europe N.V.**  
 Headquarters: Tessenderlo, Belgium  
 Sales Branches:
  - Lyon, France
  - Berlin, Germany
  
- Tosoh Bioscience GmbH**  
 Stuttgart, Germany
  
- Tosoh Bioscience Ltd.**  
 Redditch, United Kingdom
  
- Tosoh Bioscience, A.G.**  
 Littau, Lucerne, Switzerland
  
- Tosoh Bioscience SRL**  
 Torino, Italy
  
- Delamine B.V.**  
 Amersfoort, The Netherlands
  
- Tosoh Quartz, Inc.**  
 Durham, United Kingdom
  
- Tosoh Europe B.V.**  
 Amsterdam, The Netherlands
  
- Tosoh Europe B.V. (SMD Group)**  
 Wertheim, Germany
  
- Tosoh Hellas A.I.C.**  
 Thessaloniki, Greece



# Southeast Asia



- **Philippine Resins Industries, Inc.**  
Makati City, The Philippines
- **Tosoh Polyvin Corporation**  
Batangas, The Philippines
- **Mabuhay Vinyl Corporation**  
Makati City, The Philippines
- **P.T. Standard Toyo Polymer**  
Jakarta Pusat, Indonesia
- **Tosoh Asia Pte. Ltd.**  
Singapore
- **Tosoh SMD Korea, Ltd.**  
Kyungki-Do, Korea
- **Tosoh SMD Taiwan, Ltd.**  
Hsinchu, Taiwan
- **Tosoh Quartz Co., Ltd.**  
Hsinchu, Taiwan
- **Tosoh Quartz Co., Ltd.**  
Tainan, Taiwan

# China



- Tosoh (Shanghai) Co., Ltd.
- Tosoh SMD (Shanghai) Co., Ltd.
- Tosoh Bioscience (Shanghai) Co., Ltd.
- Nippon Polyurethane Science & Technology (Shanghai) Co., Ltd.
- Nippon Polyurethane Industry (Ruian), Co., Ltd.  
Wunzhou, China
- Tosoh Logistics Warehouse Co., Ltd.  
Guangzhou, China
- Tosoh (Guangzhou) Chemical Industries, Inc.



# Regional Sales and Marketing Offices



## Americas

**Tosoh USA, Inc.**  
*Grove City, OH*

**Tosoh Specialty  
Chemicals USA, Inc.**  
*Alpharetta, GA*

## Europe, North Africa

**Tosoh Europe B.V.**  
*Amsterdam, The Netherlands*

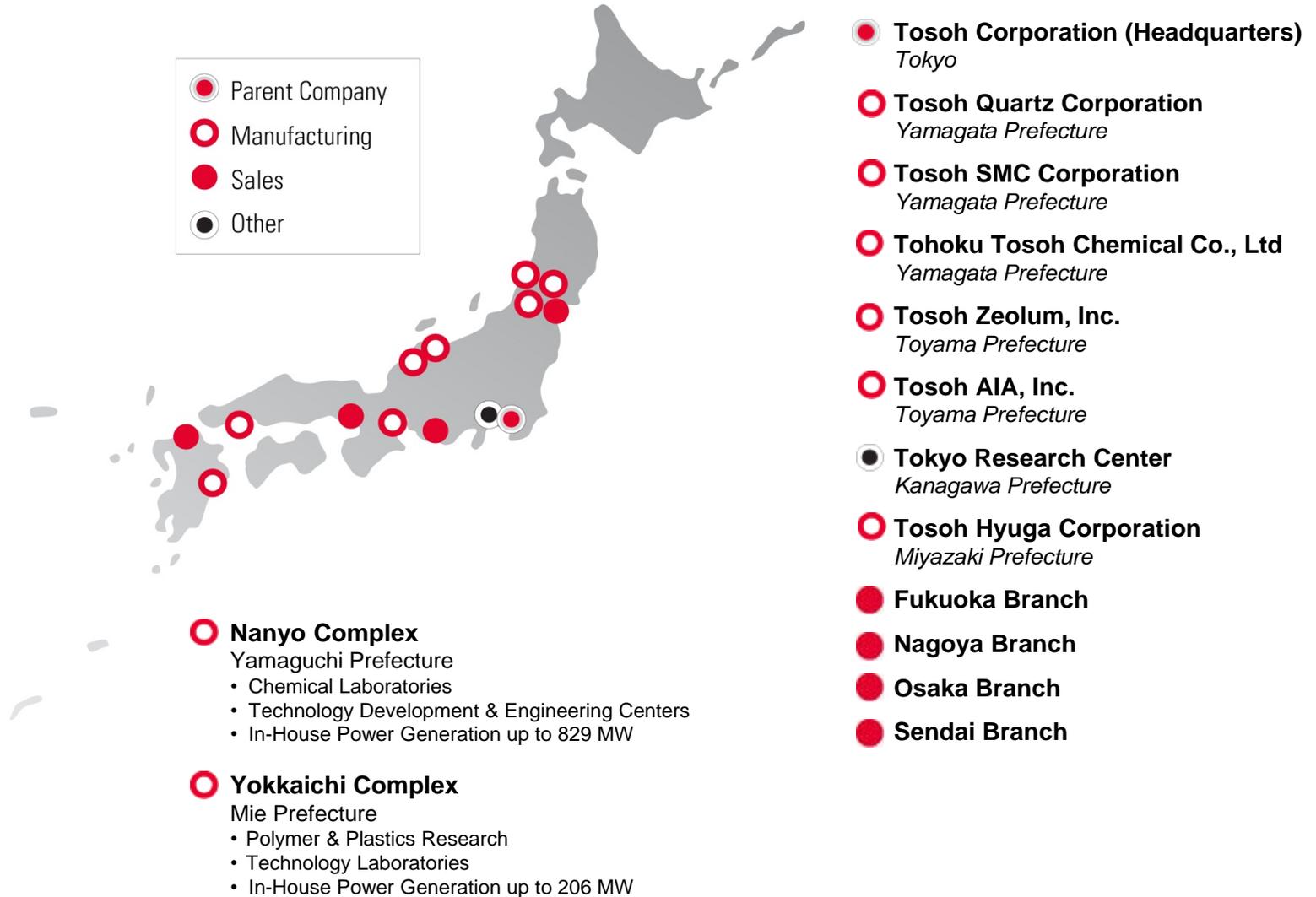
## SEA, India, Middle East

**Tosoh Asia Pte. Ltd.**  
*Singapore*

## China

**Tosoh (Shanghai) Co., Ltd.**  
**Tosoh Bioscience (Shanghai) Co., Ltd.**

# Japan





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[www.tosoh.com](http://www.tosoh.com)



## Additional Information



# Vinyl Chain

*The vinyl chain is a fully integrated sequence of manufacturing operations that produce several key vinyl-related chemicals from the raw materials salt and naphtha.*

*Salt is electrolyzed to yield chlorine and caustic soda. The chlorine reacts with ethylene to produce ethylene dichloride (EDC), and the balance is used to manufacture other chlorine derivatives.*

*Tosoh then converts EDC—which can 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.*



# Vinyl Isocyanate Chain

*Tosoh expanded its vinyl chain by supplying chlorine and other raw materials to Nippon Polyurethane Industry Co., Ltd. (NPU), for the production of isocyanates.*

*During downstream processes, NPU produces hydrogen chloride as a by-product, and the hydrogen chloride is pumped back to the Nanyo Complex for conversion to EDC.*

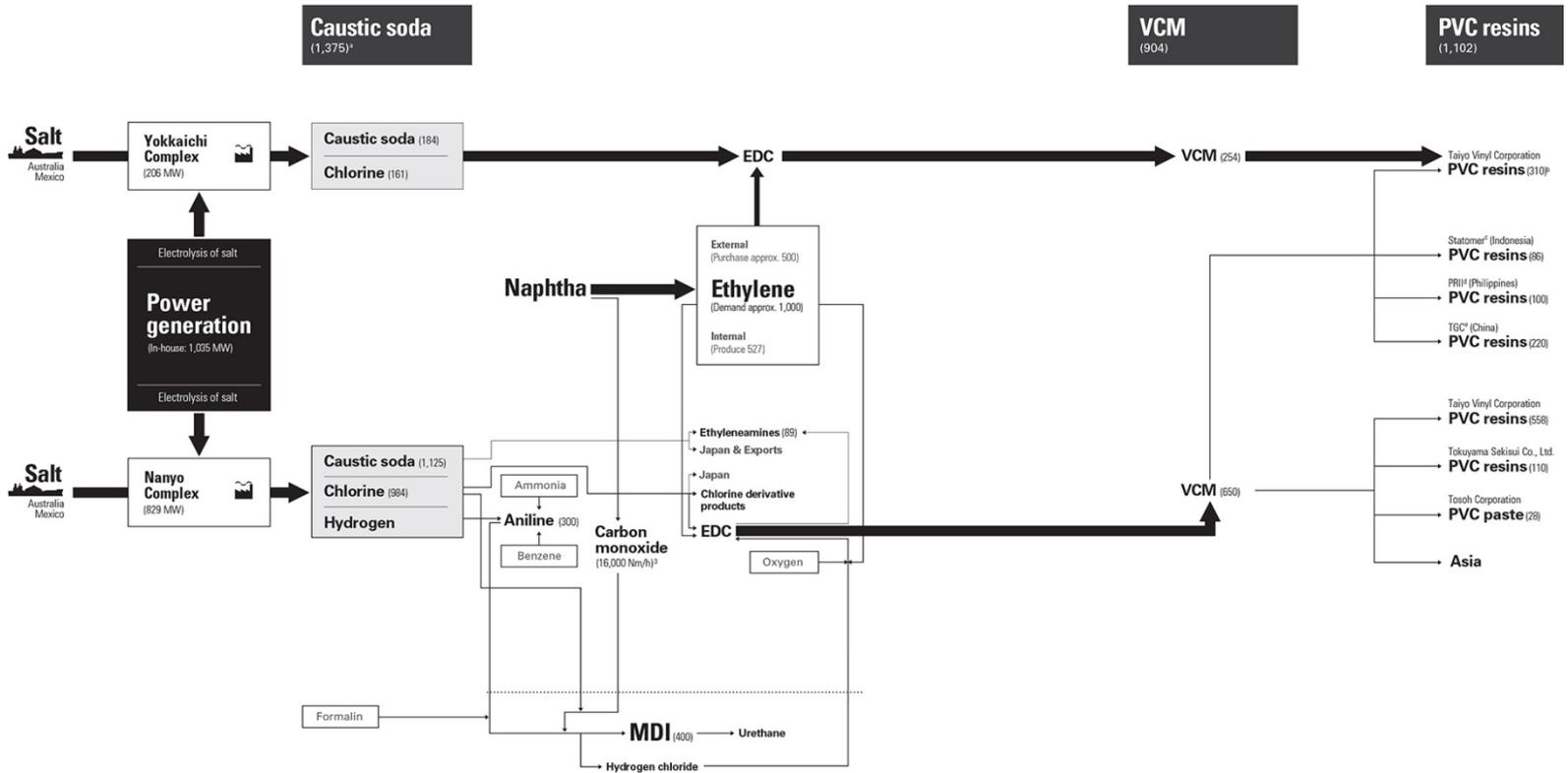
*Our Japan-based synergies result in our international competitiveness.*

*\*On October 1, 2014, NPU was merged with Tosoh Corporation, leading to the creation of the Urethane Division.*



## Tosoh Fully Integrated Vinyl Isocyanate Chain

As of July 2012  
Units: 1,000 metric tons



# Organization

