



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

\$6.7 billion sales 1,500 products* 11,500 people 106 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 2015: US\$6.7 billion



PETROCHEMICAL

US\$1.9 billion
27.6%

CHLOR-ALKALI

US\$2.4 billion
36.3%

SPECIALTY

US\$1.5 billion
21.6%

ENGINEERING

US\$630.3 million
9.4%

OTHER

US\$341.2 million
5.1%



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

11,500 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

106 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\$75.4 million investment in fiscal 2015



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

870 people \$107 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 Group

Chlor-alkali
Urethane
Cement

Petrochemicals Group

Olefins
Polymers

Specialty Group

Organic Chemicals
Bioscience Products
Advanced Materials

Engineering Group

Water Treatment

Olefins

Ethylene
Propylene
C4 Fraction
Tertiary-Butyl Alcohol
Cumene
Aromatic Compounds (Benzene, Toluene,
Xylene)



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 (PVC)
- High-Density Polyethylene (HDPE)
- Low-Density Polyethylene (LDPE)
- Linear Low-Density Polyethylene (LLDPE)
- Ethylene Vinyl Acetate (EVA) Copolymer
- Adhesive Polymer
- PVC Paste
- Polychloroprene Rubber
- Chlorosulphonated Polyethylene (CSM)
- Alkylated CSM
- Polyphenylene Sulfide (PPS) Resins
- C₉ 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

Chlor-alkali

- Caustic Soda
- Vinyl Chloride Monomer (VCM)
- Calcium Hypochlorite (Nicolon[®])
- Sodium Bicarbonate

Urethane

- Polyurethane and Isocyanates
 - Methylene Diphenyl Diisocyanate (MDI)
 - Toluene Diisocyanate (TDI)
 - Hexamethylene Diisocyanate (HDI)
- 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 Niclon 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[®]
RZETA[®])

Bromine

Hydrobromic Acid

Flame Retardants (110R[®], 120R[®], FLAMECUT[®])

Chelating Agents (TS-300, TX-10)

Nonaqueous Solvents (HC series)

Sodium P-styrene Sulfonate (Spinomar[®] 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 (GHb) Analyzers

Real-Time Fluorescence Monitoring Systems

High-Performance Liquid Chromatography (HPLC) 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[®] series)

Grinding Media (YTZ[®])

Zirconia Fine Beads

Electrolytic Manganese Dioxide (EMD)

Zeolites for Molecular Sieves (Zeolum[®])

Zeolites for Catalysts (HSZ[®] 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

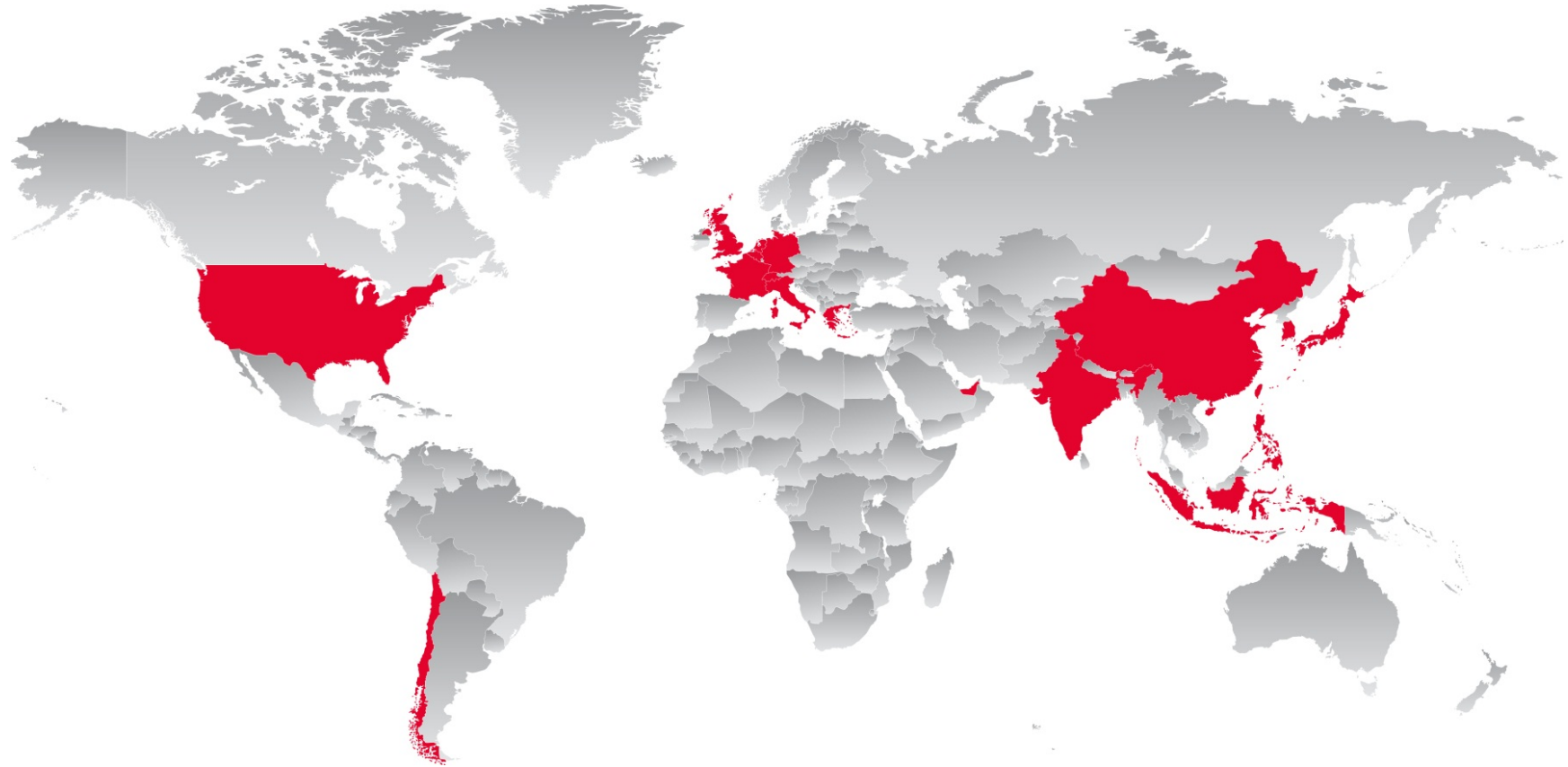


To Keeping Water Pure: A Part of Your Daily Life

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

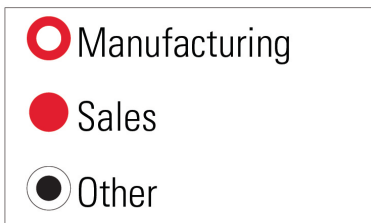


Global Solutions

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.



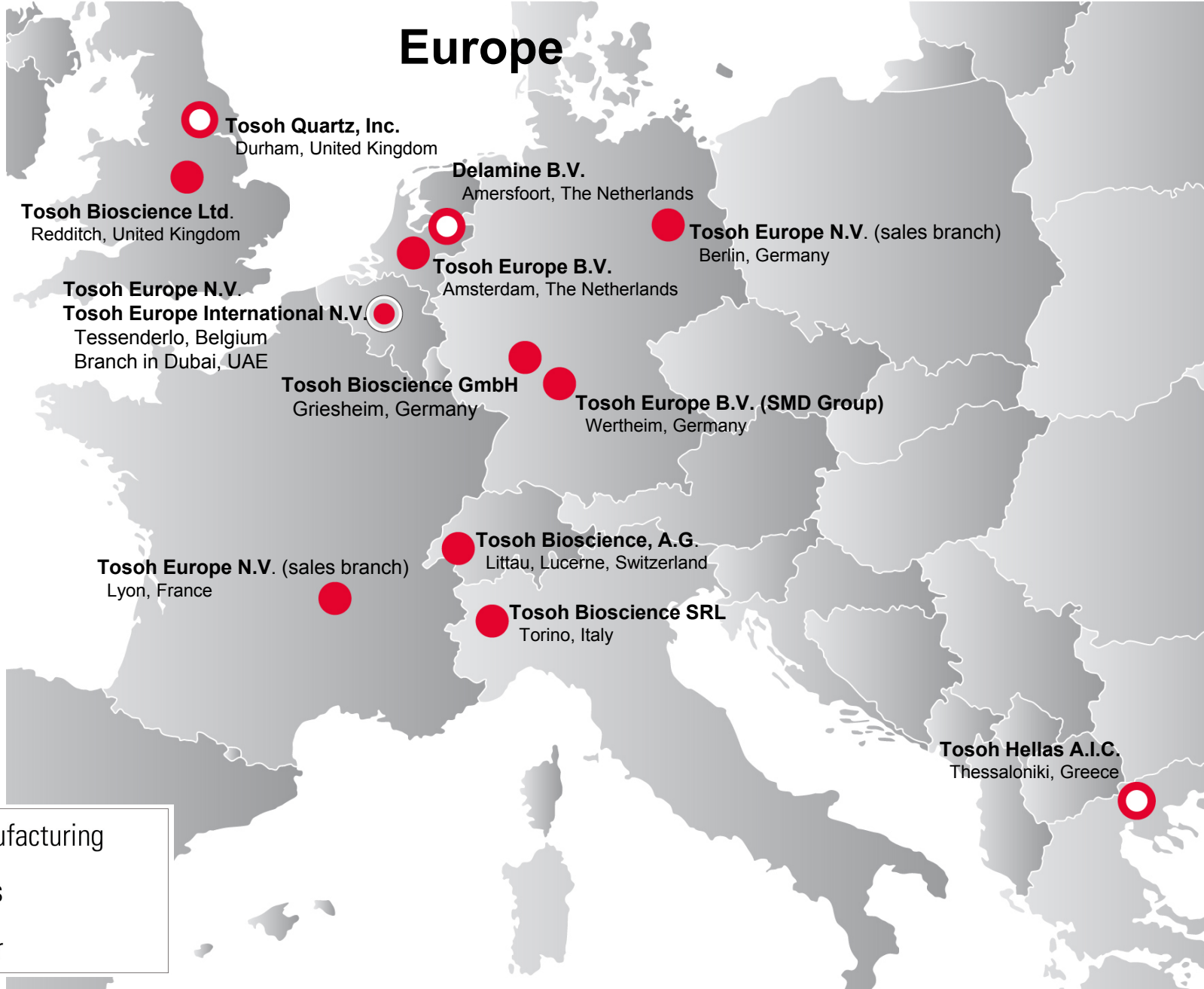
Americas



● **Tosoh Bioscience Latin America SpA**
Santiago, Chile



Europe



○ Manufacturing
● Sales
● Other



Southeast Asia



Lilac Medicare Pvt. Ltd.
Navi Mumbai, India

Tosoh SMD Korea, Ltd.
Kyungki-Do, Korea

Tosoh Quartz Co., Ltd.
Tainan, Taiwan

Tosoh SMD Taiwan, Ltd.
Hsinchu, Taiwan

Tosoh Quartz Co., Ltd.
Hsinchu, Taiwan

Philippine Resins Industries, Inc.
Makati City, The Philippines

Tosoh Polyvin Corporation
Batangas, The Philippines

Mabuhay Vinyl Corporation
Makati City, The Philippines

Tosoh Asia Pte. Ltd.
Singapore

P.T. Standard Toyo Polymer
Jakarta Pusat, Indonesia

○ Manufacturing

● Sales

○ Other



China





Regional Sales and Marketing Offices



Americas

Tosoh USA, Inc.
Grove City, OH, USA

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

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

Nanyo Complex

Yamaguchi Prefecture

- Technology Center
- Inorganic Materials Research Laboratory
- Organic Materials Research Laboratory
- Yamaguchi Sales Office
- In-House Power Generation up to 829 MW

Fukuoka Branch

Fukuoka Prefecture

Tosoh Hyuga Corporation

Miyazaki Prefecture

Osaka Branch

Osaka Prefecture

Yokkaichi Complex

Mie Prefecture

- Functional Polymers Research Laboratory
- Polymer Materials Research Laboratory
- In-House Power Generation up to 206 MW

Tosoh Zeolum, Inc.

Toyama Prefecture

Tosoh AIA, Inc.

Toyama Prefecture

Tosoh Quartz Corporation

Yamagata Prefecture

Tosoh SMC Corporation

Yamagata Prefecture

Tohoku Tosoh Chemical Co., Ltd

Yamagata Prefecture

Sendai Branch

Miyagi Prefecture

Nagoya Branch

Aichi Prefecture

Tosoh Corporation (Headquarters)

Tokyo

Life Science Research Laboratory

Advanced Materials Research Laboratory

Kanagawa Prefecture

Polyurethane Research Laboratory

Kanagawa Prefecture

- Manufacturing
- Sales
- Other



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Additional Information

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, chlorine and carbon monoxide (latter two from the vinyl chain) leads to methylene diphenyl diisocyanate (MDI), an essential raw material for polyurethanes.



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 October 2014

Units: 1,000 metric tons per year

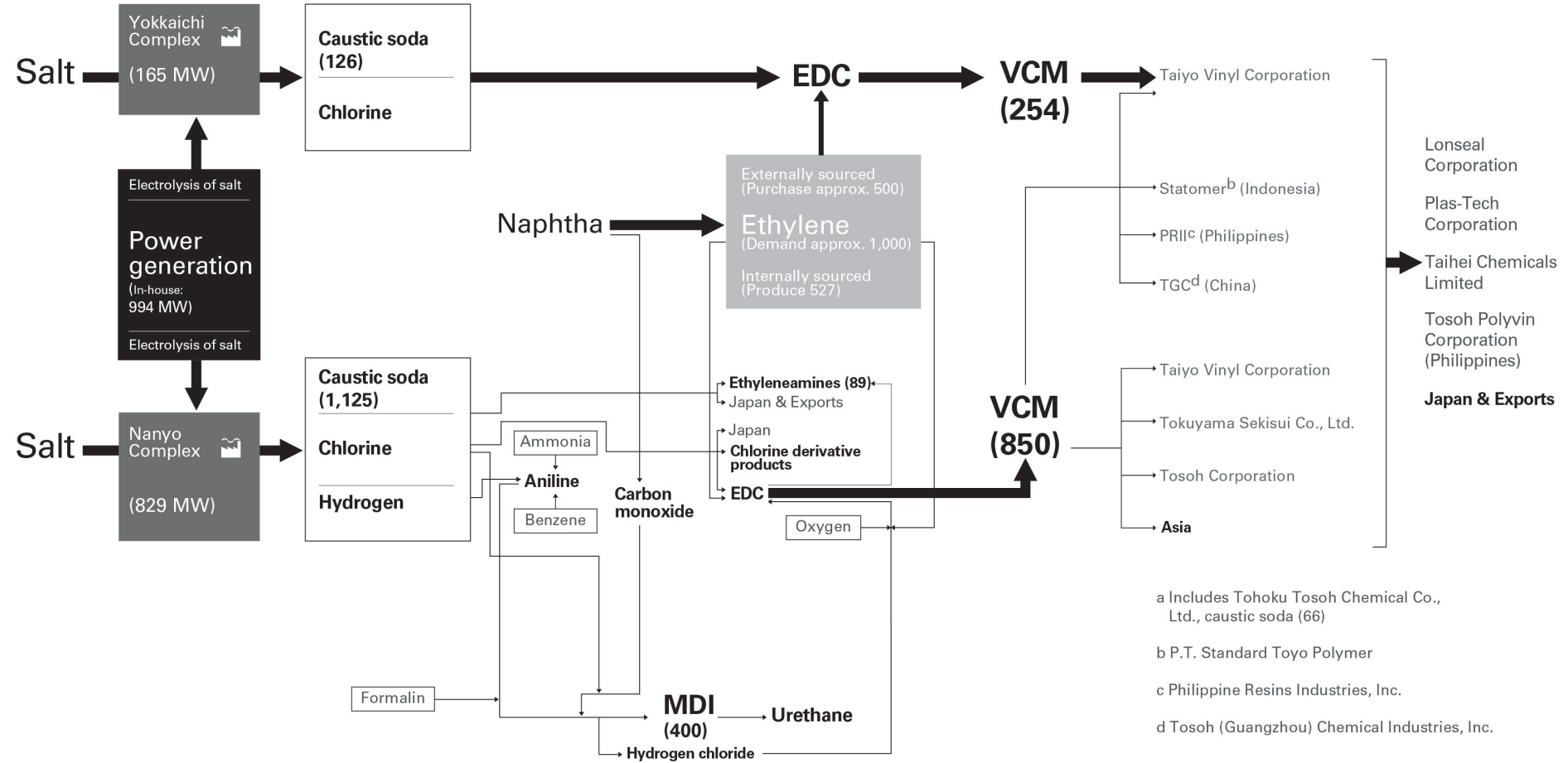


Caustic soda total
(1,317)^a

VCM total
(1,104)

PVC resins total
(1,126)

PVC processing



^a Includes Tohoku Tosoh Chemical Co., Ltd., caustic soda (66)

^b P.T. Standard Toyo Polymer

^c Philippine Resins Industries, Inc.

^d Tosoh (Guangzhou) Chemical Industries, Inc.



Organization

