History Prior to Integration

Through integration, Showa Denko and Showa Denko Materials (the former Hitachi Chemical) will bring midstream materials and downstream application technologies together within a single corporate group. As an integrated entity, we will maximize the resultant synergetic effects to continuously create new functions in response to the needs of the times for advanced materials, thereby contributing to the sustainable development of society.

Showa Denko

Originating in the field of electrochemistry, Showa Denko has developed its technological capabilities over the course of years to expand into the fields of inorganic chemistry, organic chemistry, and metal materials. Many of its past technological achievements have been passed down to serve the development of a wide variety of products in use today, including materials and components used for IT equipment and mobility devices as well as essential daily items.

1908
Established Sobo Marine Products K.K. (later Nihon Iodine K.K.) to manufacture and sell iodine

1931
Started production of ammonium sulfate using domestic technology (Showa Fertilizers K.K.)

1934
Industrialized domestically produced aluminum (Nihon Iodine K.K.)

Successfully promoted the domestic production of ammonium sulfate and aluminum, while working to facilitate the use of electricity as a material and the development of domestic technologies

1939
Established Showa Denko K.K. through the merger of Showa Fertilizers and Nihon Electrical Industries

1945
Resumed production of ammonium sulfate fertilizer

1951
Achieved domestic production of synthetic resin emulsion (Showa Highpolymer Co., Ltd.)

1953
Achieved domestic production of unsaturated polyester resin (Showa Highpolymer Co., Ltd.)

1965
Achieved domestic production of vinyl ester resin (Showa Highpolymer Co., Ltd.)

1969
Oita Petrochemical Complex started commercial operation

Enabled integrated manufacturing of a diverse range of petrochemical products, such as polyethylene, polypropylene, and acetic acid, through construction of the Oita Petrochemical Complex

1986
Started production and sale of aluminum cylinders (Showa Aluminum Corporation)

1988
Entered the hard disk business

Employed the sputtering (thin-film forming) method, a challenging technical option, to manufacture HD media, anticipating future demand for larger storage capacity

2001
Merged with Showa Aluminum Corporation

2003
Started the plastic chemicals recycling business

Processed used plastics to recover gas to use as material for hydrogen, ammonia, soda, dry ice, and other products, looking to contribute to a recycling-based economy

1984
Started production of circuit connecting film for displays

Developed anisotropically conductive circuit connection films, an innovation that enabled mass production of high-definition LCD screens

1992
Started sale of reflow-resistance epoxy molding compounds

1955
Started production of copper-clad laminates for multilayer PWBs

Developed technique to enable complicated wiring on a single copper-clad laminate board, which facilitated mass production of electronic circuits, a key contributor to the popularization of commercial television and radio systems

1974
Started production of pharmaceutical, MS-antigen

1978
Started sale of photosensitive film of alkali-based solvents

1930
Started trial production of phenol resin laminates

1931
Started trial production of porcelain insulators

1933
Started trial production of carbon brushes

1912
Started research into electrical insulating varnishes aiming at domestic production (origin of the former Hitachi Chemical)

Started research into insulating varnish for electrical motors aiming at domestic production

Showa Denko

Showa Denko Materials

2009
Started production of cooling devices for power semiconductors

Developed cooling devices for power semiconductors applying Showa Denko's proprietary thermal design technology and aluminum processing technique

2010
Merged with Showa Highpolymer Co., Ltd.

2016
Established a joint venture in South Korea for semiconductor processing high-purity gas production

1998
Started mass production of carbon anode materials for lithium-ion batteries

Started production of CMP slurry for shallow trench isolation (STI)

Developed proprietary cerium oxide particles to achieve high-speed polishing (smoothing) to increase productivity

2001
Started production of molded plastic rear door modules

Succeeded in manufacturing molded plastic rear door modules for the first time in Japan using the resin molding technology nurtured over many years

2008
Started production of allergy diagnostic reagents for simultaneous measurement of 33 items

2017
Acquired SGL GE, a German graphite electrode supplier

Acquired the graphite electrode business to promote global development

2017
Started contract development and manufacturing for regenerative medical products

Built global supply systems to promote businesses for contract development and manufacturing for regenerative medical products, thereby contributing to increased availability of regenerative medicine

2022
Substantive integration
(Integration of the management team)

2023
RESONAC
Integration as a corporate entity

Note: The change in Company name is subject to approval at the extraordinary general shareholders' meetings scheduled to be held for both companies in late September 2022.

Showa Denko Materials
(The former Hitachi Chemical Co., Ltd.)

Showa Denko Materials continues to create new functions and value centered on semiconductor materials and other IT and mobility products. These efforts are driven by its proficiency in developing products using the material design technologies to capitalize on the material characteristics it has fostered since its founding.

Change Society through the Power of Chemistry
The Quest to Shape a Desired Future

The Story of Showa Denko

A driving force behind Showa Denko in its early years was the desire of founder Nobuteru Mori (1884–1941) to save people from hunger and to enrich their lives. This passion propelled us to achieve, for the first time, domestic production of ammonium sulfate, which was used to manufacture the fertilizer necessary for growing food, in 1931, before commencing refinement of aluminum by taking advantage of plentiful hydroelectric power generation resources in 1934. These successes helped Showa Denko to contribute to the increased competitiveness of Japan on the global stage while enabling it to grow its business. It could thus be said that Showa Denko was motivated by the spirit of Goals 2 and 9 of the United Nations Sustainable Development Goals (SDGs) some 80 years before they were announced. In fact, hydroelectric power is garnering renewed attention today as a form of renewable energy.

The Story of Showa Denko Materials

The core of Showa Denko Materials at the time of its founding was the resin technologies it used to achieve domestic production of electrical insulating varnishes in 1914. These material technologies, which involving kneading, mixing, and applying resins, have given rise to a range of functions, which have been commercialized as coatings, adhesives, and molding materials. The scope of Showa Denko Materials' business has continued to grow as its lineup evolved to include processed products made using these materials. Similar to Showa Denko, the business of Showa Denko Materials has long been founded on the principles of Goal 9 of the SDGs, as seen in its history of developing technologies for domestic production of chemicals. Furthermore, Showa Denko Materials has also embodied the spirit of what we refer to as "SDG Goal 18"* through its dedication to identifying and resolving social issues from a forward-looking perspective.

SDG Goal 2: Zero hunger
SDG Goal 9: Industry, innovation and infrastructure
* We refer to addressing issues not covered in the SDGs that will be discovered in the future, specifically by changing society through the power of chemistry, as "SDG Goal 18."

More details on the stories of both companies are available on our corporate website.

Overview of the Showa Denko Group's Business (2021 Results)

Capital Stock

¥182.1 billion

Up 29.6% year on year

Total Assets

¥2,142.4 billion

Down 2.8% year on year

Consolidated Net Sales

¥1,419.6 billion

Up 45.8% year on year

Net Sales Ratio

In Japan **53%**

Outside Japan **47%**

Consolidated Number of Employees

26,054

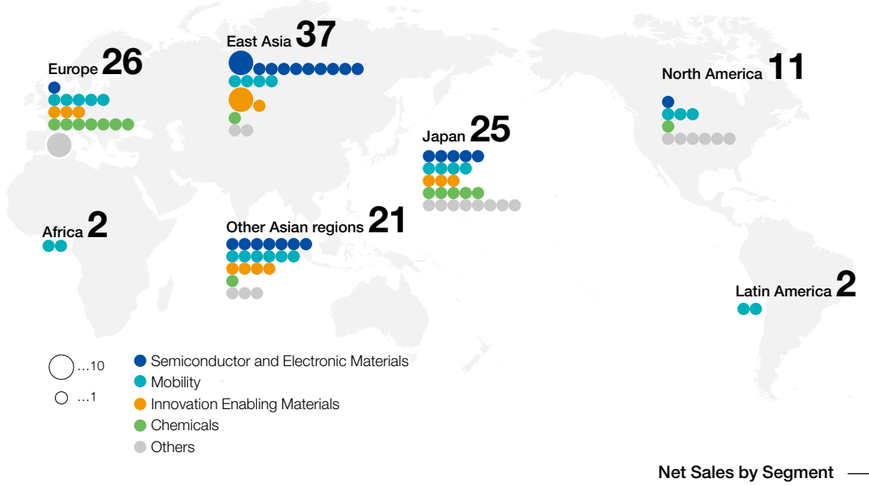
Down 22.7% year on year

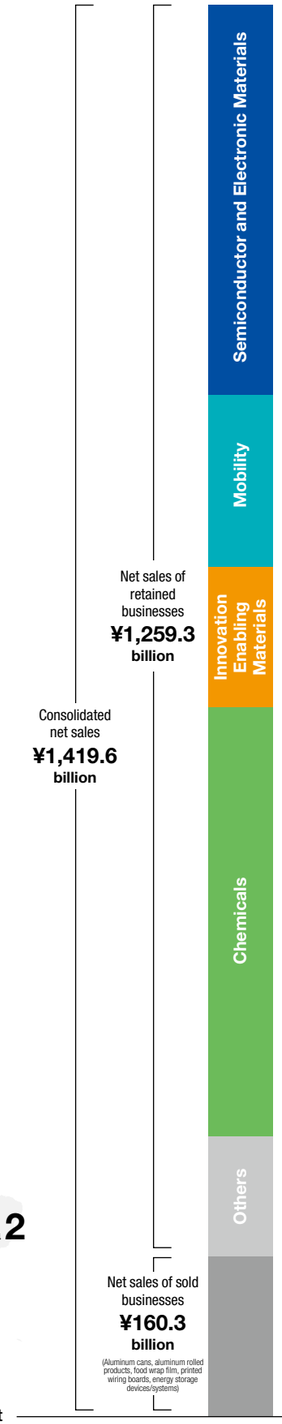
Consolidated Workforce Composition

In Japan **48.8%**

Outside Japan **51.2%**

Global Network (As of December 31, 2021)





Net Sales by Segment

▶ A change to reportable segments was instituted in 2022. For details, please refer to Segment Overview. P.40

Semiconductor and Electronic Materials

Semiconductor materials (front-end and back-end), Device solutions (HD), Device solutions (SiC)

Net sales **¥391.8 billion** | Operating income **¥46.9 billion**

The Semiconductor and Electronic Materials segment supplies hard disk media as well as SiC epitaxial wafers, a next-generation power semiconductor material that is used in front-end and back-end semiconductor production processes.

Major products
- Front-end semiconductor materials: Electronic chemicals, materials for mechanical semiconductor planarization (CMP slurry)
- Back-end semiconductor materials: Epoxy molding compounds, die bonding materials, copper-clad laminates, photosensitive dry film, photosensitive solder resist
- Device solutions: hard disk media, SiC epitaxial wafers, compound semiconductors (LEDs)


Semiconductor materials


Hard disk media

Mobility

Automotive products, Lithium-ion batteries

Net sales **¥173.8 billion** | Operating loss **(¥2.0 billion)**

The Mobility segment contributes to the production of lighter-weight vehicles with molded plastic rear modules and plastic gears, while supplying lithium-ion battery materials and heat control materials for use in the electrification of vehicles.

Major products
- Automotive products: Molded resins, friction materials, powdered metal products
- Lithium-ion battery materials: SPALF aluminum laminated film, carbon nanofiber additives, carbon anode materials


Large-scale single-unit module


Advanced battery materials

Innovation Enabling Materials

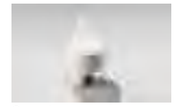
Ceramics, Functional chemicals (resins, etc.), Aluminum specialty components, Coating materials

Net sales **¥141.3 billion** | Operating income **¥13.8 billion**

The Innovation Enabling Materials segment supplies a wide range of technologies and materials that support the innovation and competitiveness of the Showa Denko Group's businesses. Offerings include ceramics, functional chemicals, aluminum specialty components, and coating materials.

Major products
- Functional chemicals, functional resins, coating materials, ceramics, aluminum specialty components


Functional chemicals


Ceramics

Chemicals

Petrochemicals, Basic chemicals and Industrial gases, Graphite electrodes

Net sales **¥431.0 billion** | Operating income **¥37.9 billion**

The Chemicals segment boasts a lineup of competitive, high-share products including olefin, organic chemicals, basic chemicals, industrials gases, and graphite electrodes.

Major products
- Petrochemicals: Olefins, organic chemicals
- Basic chemicals and Industrial gases
- Graphite electrodes


Petrochemical plant


Graphite electrodes


Industrial gas plant

Others

Net sales **¥121.4 billion** | Operating loss **(¥3.6 billion)**

The Others segment conducts the manufacture and sale of in vitro diagnostic products and the contract development and manufacture of regenerative medicines as life science products. Figures for the Others segment include intersegment transactions.

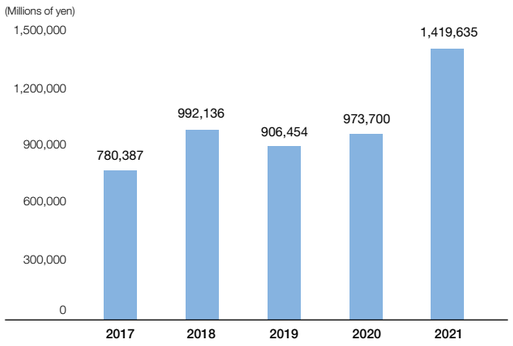

Regenerative medicine production

Notes:
1. Segment data figures have not been audited by a certified public accountant and are provided as reference figures that exclude the aluminum can and sheet, plastic food wrap, printed wiring board, and electricity storage device operations transferred in 2021.
2. Segment performance figures on subsequent pages only reflect retained businesses.

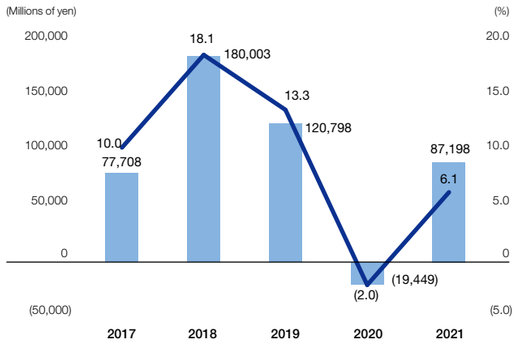
Financial and Nonfinancial Highlights

Figures include data for Showa Denko Materials after July 1, 2020.

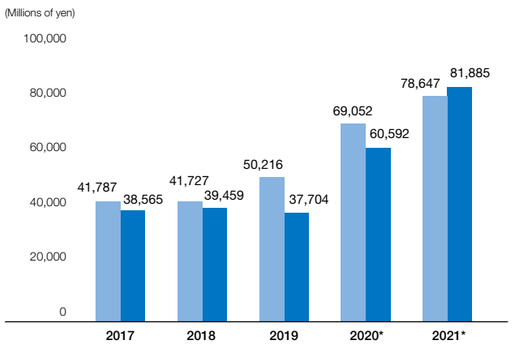
Net Sales



Operating Income (loss) / Ratio of Operating Income (loss) to Sales

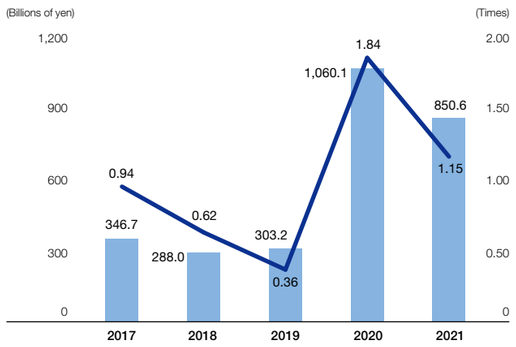


Capital Expenditures / Depreciation and Amortization



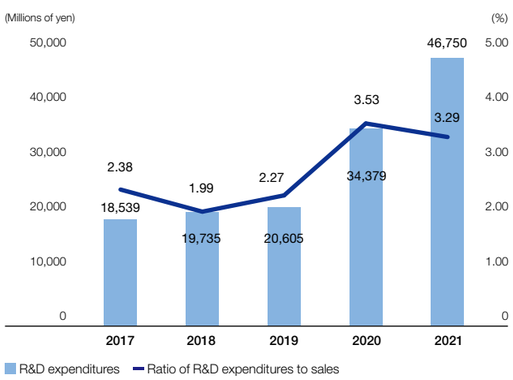
* Figures exclude amortization of intangible assets resulting from the purchase price allocation of Showa Denko Materials.

Interest-Bearing Debt / Post-Adjustment Net Debt/Equity Ratio

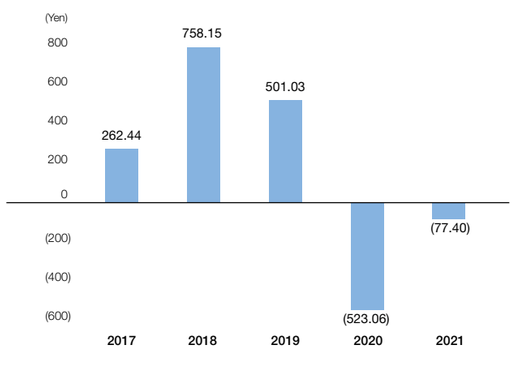


Note: For more details, please refer to note 2 on page 92.

R&D Expenditures / Ratio of R&D Expenditures to Sales

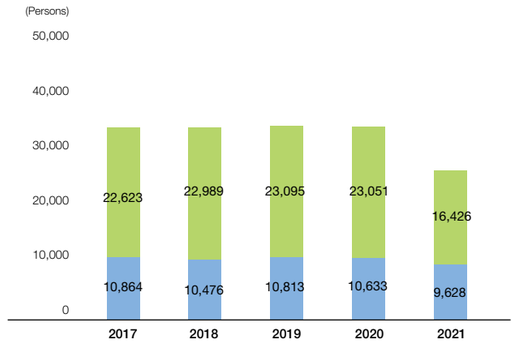


Net Income (loss) per Share

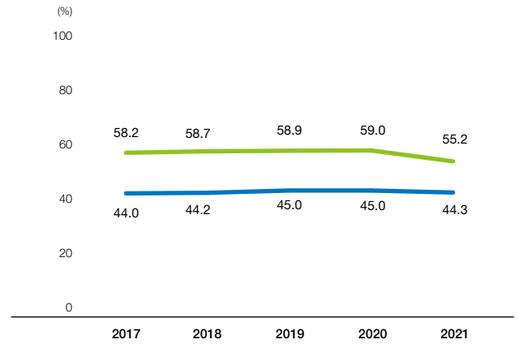


Figures for Showa Denko Materials are displayed prior to its incorporation into the Showa Denko Group on July 1, 2020, for reference purposes.

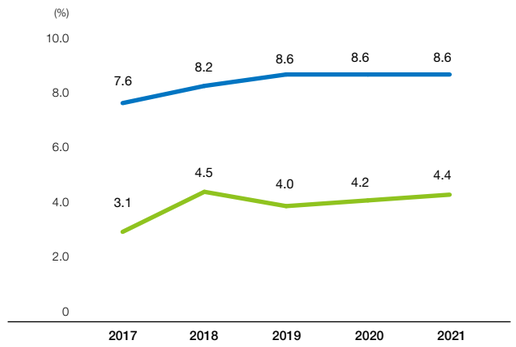
Number of Employees



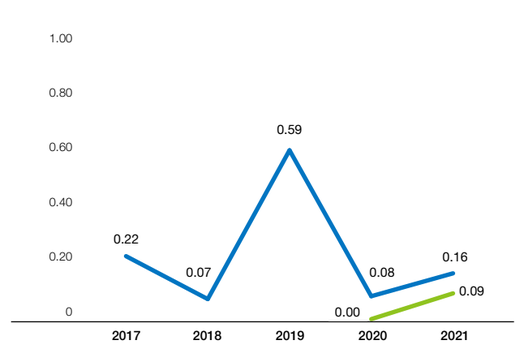
Ratio of Employees Working Outside Japan



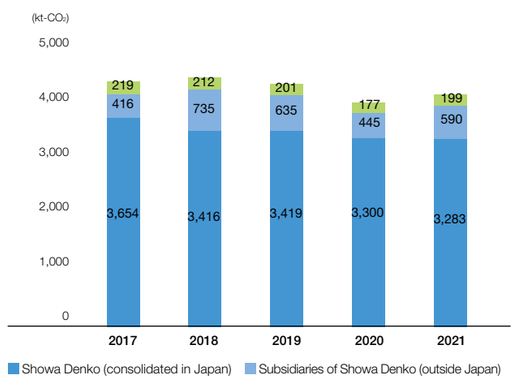
Ratio of Female Managers



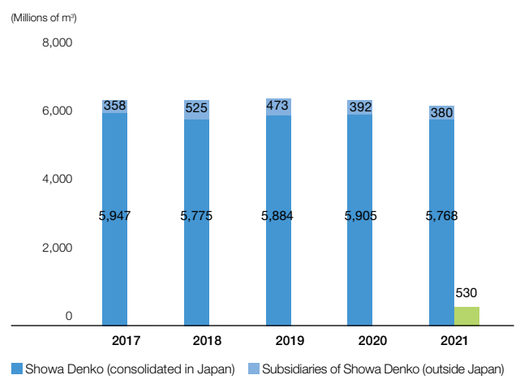
Lost-Time Incident Rate (LTIR)



Greenhouse Gas Emissions (Scope 1 + Scope 2)



Amount of Water Used



Note: Figures on page 25 for which the scope is “Showa Denko (consolidated),” “Showa Denko (consolidated in Japan),” or “Subsidiaries of Showa Denko (outside Japan)” exclude figures for Showa Denko Materials and its consolidated subsidiaries.