

## Petrochemicals

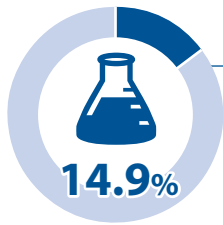
The Oita Complex is the main manufacturing base of the Petrochemicals Division and is equipped with a naphtha cracker. The Complex produces olefins, including ethylene and propylene. As its feature, the Complex has a well-balanced demand structure. The basic raw materials manufactured within the Complex are supplied not only to Showa Denko's plants producing organic chemicals, including vinyl acetate, ethyl acetate

Consolidated Business Results (Millions of yen)

	2017	2018	Increase/ decrease	Rate of change
Sales	251,128	268,879	17,751	7.1%
Operating Income	33,357	20,333	-13,024	-39.0%

and other acetylic derivatives, but also to other companies' plants in and around the Oita Complex producing plastics, synthetic rubber, and styrene monomer, including a plant producing polypropylene that is operated by SunAllomer Ltd., a subsidiary of Showa Denko.

Showa Denko is expanding business to produce acetylic derivatives by taking advantage of the Company's advanced catalyst technology.



## Chemicals

The Electronic Chemicals Division supplies semiconductor manufacturers in Japan and overseas with more than 20 kinds of high-purity gases, including fluorinated etching gases, ammonia and chlorine gases, chemicals, and equipment for use in the LCP, LED, and solar cell manufacturing processes.

The Industrial Gases Division supplies oxygen, nitrogen, and argon separated from air as well as compressed hydrogen, carbonic acid, dry ice, and other industrial gases to a range of industries. The Division especially contributes to a stable supply of food and food safety by providing of carbonic acid gas, mainly used for carbonated drinks and dry ice to keep food cool.

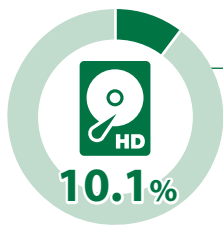
The Basic Chemicals Division supplies ammonia, acrylonitrile, caustic soda, hydrochloric acid, and other industrial chemicals. The

Consolidated Business Results (Millions of yen)

	2017	2018	Increase/ decrease	Rate of change
Sales	148,758	156,541	7,782	5.2%
Operating Income	16,474	17,393	919	5.6%

Division also supplies amino acids, as well as elastomer products, such as chloroprene rubber. ECOANN™ ammonia, which utilizes used plastics as one of raw materials, is a product that contributes to the creation of a recycling-oriented society and is mainly used as a denitration agent at thermal power plants.

The Functional Chemicals Division consists of the Functional Polymers Department and the Specialty Chemicals Department. The Functional Polymers Department provides various types of plastics, including unsaturated polyester resin, which is light, strong and corrosion-resisting, and molding compounds made by using the plastics. The Specialty Chemicals Department offers innovative and unique products, such as raw materials for cosmetics, resins for use as electronic materials, and columns for high performance liquid chromatography (HPLC).



## Electronics

The Showa Denko Group is the largest independent HD media supplier in the world. The Device Solutions Division (former HD Division) conducts HD media business from seven bases around the world, including three in Japan. This division provides world-class high-quality products for use in PCs and other consumer electronic products as well as for use in data centers and other enterprise fields, where demand is expected to grow due to the spread of cloud computing.

The Electronics Materials Division supplies compound semiconductor materials and rare earth magnetic alloys. For compound semiconductor materials, the Division has a wide lineup

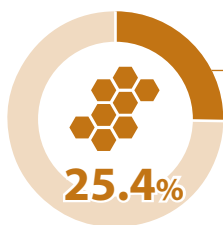
Consolidated Business Results (Millions of yen)

	2017	2018	Increase/ decrease	Rate of change
Sales	123,064	105,823	-17,241	-14.0%
Operating Income	21,925	12,397	-9,528	-43.5%

of high-output LEDs with industrial applications, including use in displays and sensors.

The Advanced Battery Materials Division is promoting production and sales of various materials for lithium-ion batteries, including SCMG™ high-input/output long-life anode material, VGCF™ unique anode and cathode additive featuring high stability and quality, and SPALF™ aluminum laminated film. The demand for lithium-ion batteries has been growing in recent years.

\*HD Division was reorganized into Device Solutions Division at the beginning of 2019, when epitaxial wafers business was transferred from the Others segment into this new division.



## Inorganics

The Carbon Division supplies graphite electrodes for electric steelmaking furnaces. These electrodes are indispensable for the recycling of iron and steel. Showa Denko's graphite electrodes are highly acclaimed by customers around the world. The Division integrated the graphite electrode business of German company SGL GE GmbH in 2017 to become the world's No.1 manufacturer in this field. The Division will enhance the development and marketing of volume zone products for fast growing markets in emerging countries, while providing advanced markets with high-end products.

### Consolidated Business Results (Millions of yen)

	2017	2018	Increase/ decrease	Rate of change
Sales	73,442	266,149	192,707	262.4%
Operating Income	6,979	132,445	125,466	1,797.8%

Capitalizing on long-accumulated high-temperature fusion technology, high-temperature sintering technology, and the pulverization/classification technology, the Ceramics Division manufactures and sells polishing materials, abrasives, and refractories where fused alumina, silicon carbide, and boron nitride are used. As for ultrafine titanium oxide, used as the main material to manufacture multilayer ceramic capacitors (MLCCs) that are mounted on a range of electronic devices, the Division is expanding sales for use in high-end products.



## Aluminum

The Aluminum Rolled Products Division provides high-purity aluminum foils, which are carefully purified and manufactured for use in electrolytic capacitors. These capacitors are widely used in a range of products, including home electric appliances and automotive equipment.

The Aluminum Specialty Components Division provides aluminum materials and processed products. The Division supplies the following products not only in Japan but also in Europe, the United States, and Southeast Asia: aluminum cylinders (core component of laser beam printers), large/complexly shaped extruded products, continuously cast rods of aluminum alloys (SHOTIC™) made using Showa Denko's proprietary technologies, and forged products for automobile parts including compressors for car air conditioners.

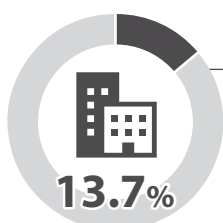
The Division also supplies a range of heat exchangers for home

### Consolidated Business Results (Millions of yen)

	2017	2018	Increase/ decrease	Rate of change
Sales	105,439	108,254	2,815	2.7%
Operating Income	6,697	4,942	-1,755	-26.2%

electric appliances and industrial equipment worldwide and is developing and manufacturing power semiconductor cooling devices used in hybrid cars, electric vehicles, and solar power generation equipment.

The Showa Denko Group became the first company to manufacture aluminum beverage cans in Japan in 1971. Since then, the Aluminum Can Division has been supplying high-quality aluminum cans for beverages through integrated production, including pressing can bodies and can ends and printing labels. Though the domestic market for aluminum cans has matured, we will expand our aluminum can business in the ASEAN market including Vietnam, a market that is expected to grow, by establishing new business bases.



## Others

Included in this section are themes for future businesses as well as the manufacture and sale of various chemical products, light metals, and building and civil engineering materials.

SiC epitaxial wafers are used as materials for next generation power semiconductors, which are expected to contribute to energy

### Consolidated Business Results (Millions of yen)

	2017	2018	Increase/ decrease	Rate of change
Sales	133,624	143,413	9,789	7.3%
Operating Income	633	2,893	2,260	357.0%

conservation. The wafers are being increasingly used in power devices for EV chargers, photovoltaic generation, and servers.

\*SiC epitaxial wafers business was reorganized into Device Solutions Division in the Electronics segment at the beginning of 2019.

For details of business results, please see the "Management's Discussion and Analysis" (p19).