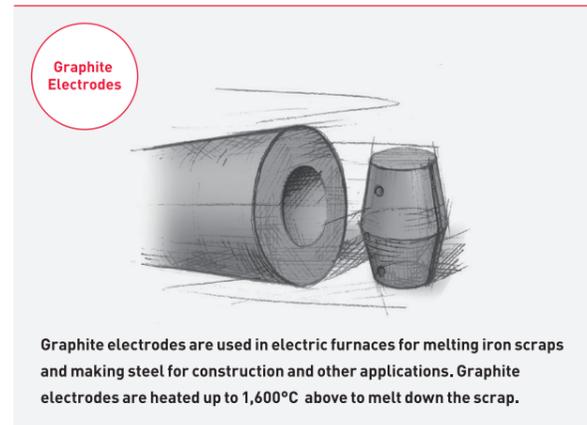


Graphite Electrodes

Working to swiftly boost competitiveness amid the ongoing shift to electric furnace steelmaking with a minimal environmental footprint



Kenji Enokidani General Manager, Graphite Electrodes Division

Review of 2021 and 2022 Outlook

The rise in raw material and energy costs lead to an operating loss in 2021. The global crude steel steadily recovered in the same period that the electrode market gradually rallied in the second half of the year and we expect to see a greater recovery in 2022 and beyond. While raw material and energy costs are expected to surge, we will set selling prices at levels that will secure appropriate profits, given stronger demand than in the previous year, to maintain stable operation and stable supply.

For Medium- and Long-Term Income Growth

Electric arc furnace (EAF) steelmaking melts iron scraps to recycle them into steel. It has the advantage of reducing CO₂ emissions from steelmaking to nearly one-fourth that of blast furnace steelmaking. Amid worldwide efforts toward carbon neutrality, the shift from blast furnaces to electric furnaces is gathering momentum, and a series of new EAF projects are planned. This shift will drive future growth in demand for graphite electrodes, which are essential as electric conductors for melting iron scraps. EAF replacing blast furnace would be a larger scale EAF that possesses higher productivity. Large capacity EAF requires high-quality large diameter electrodes. Given that we have strength in this area, a key issue is to build up an optimal production platform to capture the market growth potential. Since we obtained a facility in North America in 2017, we have been investing in replacing and strengthening different systems to optimize our existing tripolar structure consisting of Japan, Europe, and North America. We will continue working to optimize productivity throughout the Group adapting to the future market and the growing demand. We are to achieve an EBITDA margin of 30% by 2024 with continuous improvement of productivity, quality, cost and shorter processing time.

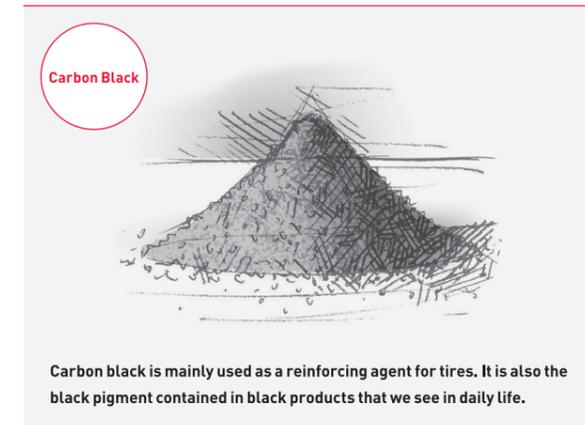


Graphite electrodes are used for melting iron scraps in EAF steelmaking. This method results in CO₂ emissions that are around one-fourth of those generated by the blast furnace method. The share of electric furnace steel is expected to increase to curtail environmental impacts, and mounting demand for graphite electrodes is anticipated.

(Millions of yen)	2020	2021
Net Sales	37,879	40,619

Carbon Black

Leveraging technological innovations to achieve carbon neutrality while capturing expanding demand for tires and new markets



Midori Hajikano General Manager, Carbon Black Division

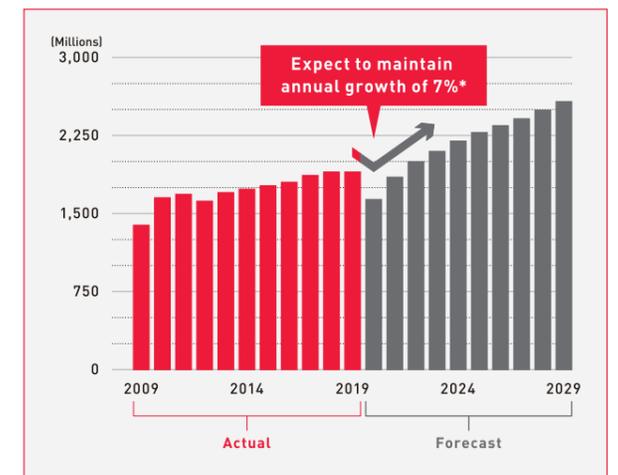
Review of 2021 and 2022 Outlook

In 2021, the global economic recovery resulted in a strong demand for tires and a recovery of carbon black sales, despite the impact of tumbling automobile production associated with shortages of semiconductors and other materials. We expect to return to an annual growth rate of 3% to 5% after a full recovery from the pandemic in 2022. If the shortages of automobile production materials are resolved, demand will grow further. It will be essential to boost the productivity of existing equipment and to develop a production and supply system by introducing environmental systems and replacing equipment for higher output.

For Medium- and Long-Term Income Growth

We will step up our efforts for carbon neutral and environmental considerations. In addition to using existing technologies to reduce CO₂ emissions, such as those for CO₂ recovery and the switchover to fuels with lower environmental impacts, we will change the raw material oil and develop technologies for recycled carbon black. Demand from the car and tire industries is expected to remain strong. Going forward, new markets for EV and battery material applications will emerge. Capitalizing on our strength in auto parts applications, we will make consistent efforts to increase demand and expand to new markets. Regarding manufacturing costs, hikes in raw material procurement costs and growth of investments in environmental equipment are likely, given soaring crude oil prices and stricter environmental regulations. Enjoying the benefit of demand growth, we will work to set selling prices at levels that allow us to secure proper margins. In addition, we will introduce new equipment to increase profitability and stabilize revenue.

Global Tire Production

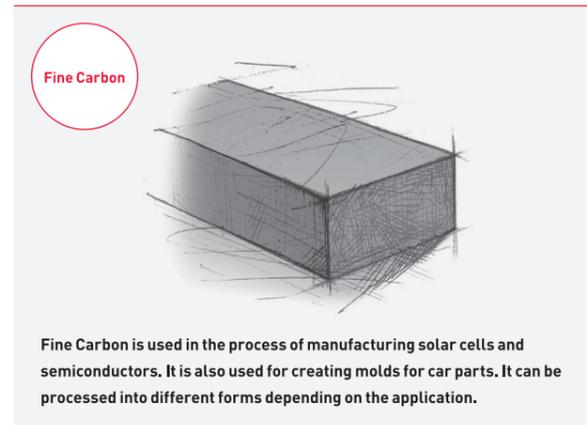


Our estimate based on automobile market forecasts and research company reports
* Annual growth forecast: 7% during 2021-2023, 3-5% for 2024 and after

(Millions of yen)	2020	2021
Net Sales	70,754	99,491

Fine Carbon

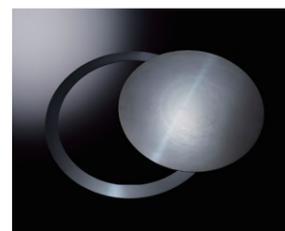
Bolstering the supply system to support the growth of the semiconductor market and shift to higher value-added materials to maintain high margin levels



Hideo Shin

General Manager,
Fine Carbon Division

Outstanding quality and performance and mass production technologies supporting products holding the world's largest market shares



Solid silicon carbide (SiC)

It is a high-purity SiC created by the chemical vapor deposition (CVD) method. We attained Industrial production by increasing the thickness of SiC coating from around 100 microns (0.1 mm) with an original process.



Glassy carbon

Using our original technology, we became the world's first company to develop this product. We produce glassy carbon by carbonizing fired resins through heat treatment.

(Millions of yen)	2020	2021
Net Sales	31,775	39,125

Review of 2021 and 2022 Outlook

In 2021, our business achieved strong results against a backdrop of high demand in the semiconductor market. However, it is essential to address negative factors hindering growth, such as rising manufacturing costs, including raw material prices and marine transport disruptions. We will set selling prices that reflect the soaring manufacturing costs and transport expenses to maintain our sound business structure.

In 2022, the semiconductor market is set to see steady growth and we will actively strive to enlarge our business. The market is highly volatile, with a cycle of growth and stagnation, so we will closely analyze market trends and make investments in a phased manner. While taking risk control measures like these, we will pursue growth strategies from a medium- and long-term perspective.

For Medium- and Long-Term Income Growth

The semiconductor market is seeing massive growth following the emergence of new lifestyles during the COVID-19 pandemic. We expect this trend to last for the foreseeable future. The rise of environmental awareness around the world increased the demand for solar cells as a leading renewable energy source and increased the demand for fine carbon products indispensable to solar cell production.

In preparation for the continued growth of the semiconductor market, we will increase our supply capacity of high-quality products. We believe that it is important to make efforts to maintain a high-margin structure, including creating synergies inside the Group and increasing the share of high value-added products. We will be aggressive in our production and sales activities, particularly for chemical vapor deposition silicon carbide (CVD-SiC), glassy carbon, and high-quality graphite products, where we have an advantage.

Smelting and Lining

We offer high-quality cathodes that maximize the energy efficiency of aluminum electrolytic furnaces in the world and the Ready-to-Use Cathode (RuC) with low environmental impact



Takashi Masaki

General Manager,
Smelting and Lining Division

Review of 2021 and 2022 Outlook

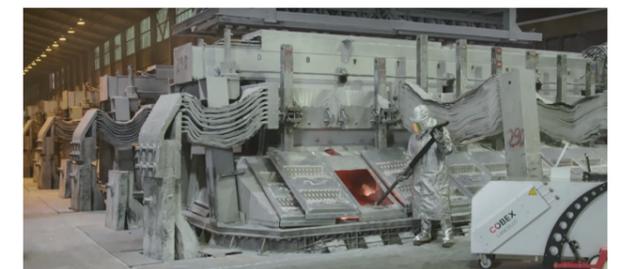
In 2021, net sales and income were close to initial forecasts despite travel restrictions and logistics disruptions in the pandemic. They were supported by continued demand for aluminum and by Tokai COBEX Savoie SAS (TCS), a France-based subsidiary we acquired in the previous year, which proved helpful to consolidated sales.

In 2022, solid sales are expected, excluding the impact of the conflict in Ukraine. Given sharp rises in raw materials and energy costs as well as in depreciation after a very large investment in the previous fiscal year, we expect sales to decline slightly from the 2021 figure. We prioritize boosting productivity and making positive upward revisions to selling prices after postponing these actions because of the pandemic.

For Medium- and Long-Term Income Growth

Amid progress in decarbonization efforts, enhancements in energy efficiency in aluminum smelting, which consumes a huge amount of electric power, is accelerating. In this context, our graphite cathode and the RuC®* cathode block are attracting attention. The first reduces power consumption per unit of production, while the second has a long service life and leads to power conservation in aluminum smelting. We will be better prepared to meet growing demand.

We were deemed eligible for subsidies regarding the battery development project by the European Commission and by the French government's recovery and resilience plan. Enjoying support for the local production of batteries for electric vehicles in Europe, we have been preparing for the local production of anode materials in France since 2021. We will transfer production technologies from Japan and make effective use of the production capacity of approximately 30 kilotons from the facilities we hold in France to reduce investment costs. We will also enjoy the advantage of using low-cost clean energy in France. We are planning to commence production by 2024.



Our high-quality cathode blocks accelerate efficient aluminum smelting and help fulfill growing aluminum demand in line with needs for weight reduction.



RuC®

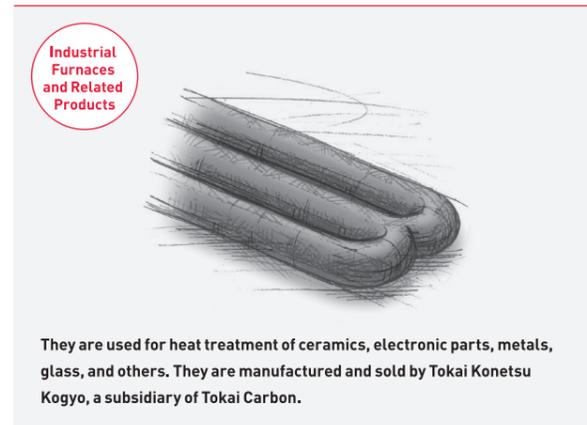
- Lowering power consumption per unit of production by 2% to 3% to help reduce CO₂ emissions
- Extending the service life of cathodes for one to three years
- Eliminating the need for customers to cast conducting bars

(Millions of yen)	2020	2021
Net Sales	36,421	49,696

* Ready-to-use Cathode (RuC®) is a revolutionary cathode solution that may be applied to all aluminum smelting technologies. It can be swiftly introduced, and it significantly lowers health and safety risks. It massively reduces the consumption of energy and lining materials.

Industrial Furnaces and Related Products

Boosting production capacity and utilizing our technological development capabilities to capture new markets and achieve sustained growth



Akihiko Sato

President,
Tokai Konetsu Kogyo Co., Ltd.

Supplying products to all sectors as a comprehensive manufacturer of heating elements and refractory materials requisite to industrial furnaces



Industrial furnaces for sintering lithium-ion batteries

Rollers inject materials to be heated into industrial furnaces. Many diverse kinds of materials are produced in large quantities.



Industrial furnaces for sintering of monolithic ceramic capacitor (MLCCs)

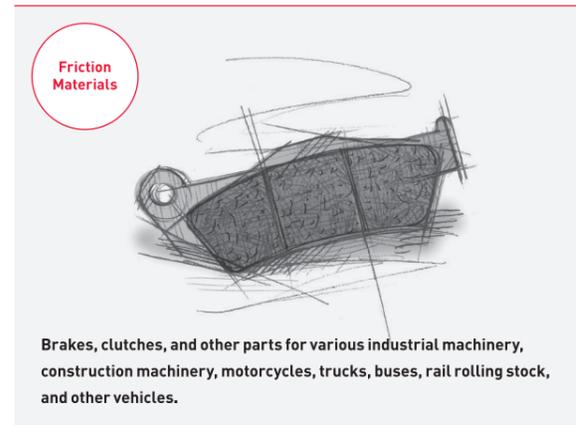
Materials to be heated are pushed through long tunnels to industrial furnaces. The furnaces are large enough to heat a large volume of materials at once.

(Millions of yen)	2020	2021
Net Sales	13,873	18,019

Other Businesses (Friction Materials, Anode Materials)

Friction Materials

Monitoring changes in lifestyles to achieve solid growth



In 2021, our performance improved significantly after steadily responding to the recovery in demand associated with the COVID-19 pandemic. Especially given lifestyle changes under the pandemic, demand expanded for products for large motorcycles, in which we excel. Demand for products for mining machinery, construction machinery, agricultural machinery, and machine tools was also solid.

In each of these areas, demand will remain strong. We will work to capture it and achieve firm growth in performance. We will accelerate the automation of our production system to ensure high productivity.



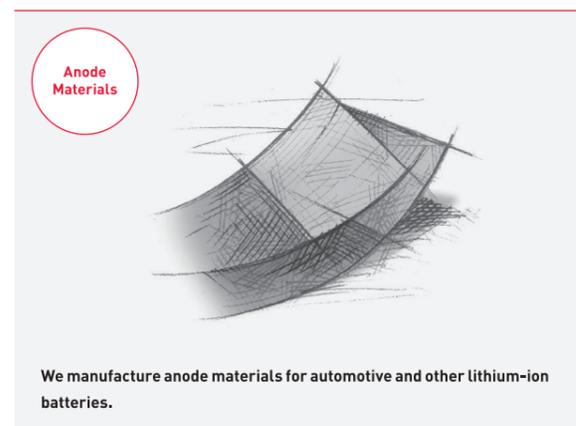
Hirofumi Masuda

General Manager,
Friction Materials Division

(Millions of yen)	2020	2021
Net Sales	6,510	8,880

Anode Materials

Taking advantage of technologies cultivated in Japan to capture mounting EV demand in Europe



In 2021, sales declined from the previous fiscal year amid intensifying competition in the market due to the emergence of competitors. We are currently working on the production of anode materials by leveraging the Group's base in France to share technologies cultivated in Japan. Europe aims for the local production of lithium-ion batteries for EVs produced in the region. As one of the few suppliers to Europe of anode materials as principal materials, we aim to start full-scale production in 2024.

(Millions of yen)	2020	2021
Net Sales	4,186	2,907