

 **SEC CARBON, Ltd.**  
<http://sec-carbon.com/eng>



Connecting with the World through Carbon

# WITH THE PRIDE OF CARBON



JQA-0379 Kyoto Plant  
JQA-EM0678 Kyoto Plant

The SEC CARBON Kyoto Plant has obtained  
ISO 9001 QMS certification and ISO 14001  
EMS certification.

 **SEC CARBON**

Connecting with the World through Carbon

# WITH THE PRIDE OF CARBON

MESSAGE

## Contribute to the World as a Top Carbon Manufacturer

Since the company's foundation, SEC CARBON has consistently made pursuits in the field of carbon and has been committed to supplying higher quality products. We have also contributed to the development of the industry. Today our company is highly praised and trusted internationally as well as domestically.

Although carbon is a material that has existed through the ages, we consider that this material has unlimited potential.

SEC CARBON is committed to continue its business activities as a carbon-specialized manufacturer.

We have been supported to this day by the efforts of our predecessors, numerous business partners and regional societies.

With humility of such history, however, we will continue our strides by devoting ourselves to the business activities and connect the history to future generations as a trustworthy and constantly evolving company. In order to fulfill our corporate responsibilities, even during tumultuous times, we will continue to develop outstanding human resources and maintain harmony with society and the environment.

From the bottom of our hearts, we sincerely appreciate your continued patronage and support for the long lasting development of our company.

Management Principle

**Our company challenges to constant changes, searches for infinite possibilities, and aspires to the top of the industry**

- We create products that meet consumers' demands
- We promote happiness of employees and shareholders
- We contribute to the development of social welfare

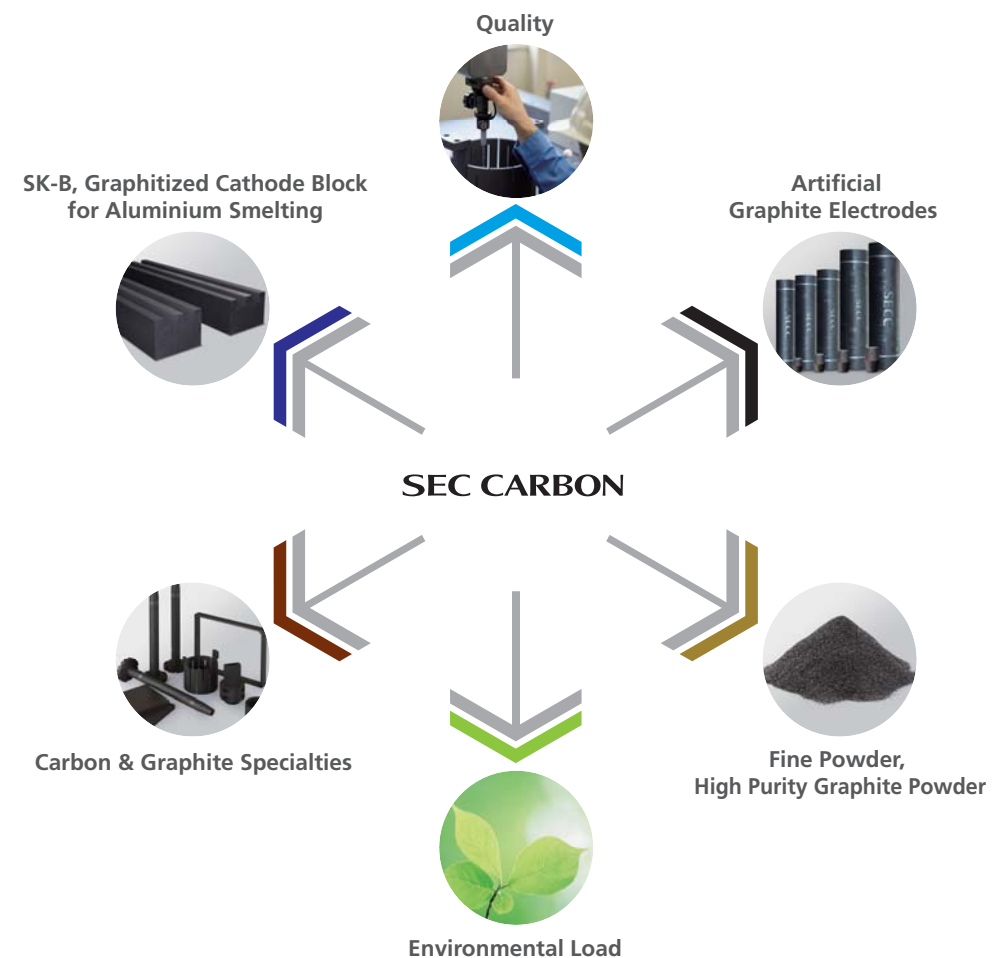
## Multifaceted Expanding Vision

Since the foundation of the company in 1934, we have been fascinated by carbon, and have contributed to development of the industries in Japan, taking full advantage of the functions of carbon. Like a carbon crystal, our vision has expanded toward multifaceted perspectives.

While always trying to improve quality of the products, we continue to reduce the environmental load to the fullest extent.

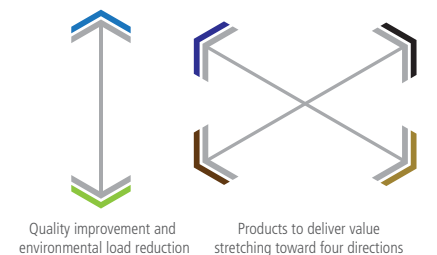
Based on such a concept, we continue to pioneer new possibilities by pursuing our four business domains, SK-B (Graphitized Cathode Block for Aluminium Smelting), Artificial Graphite Electrodes, Carbon & Graphite Specialities, Fine Powder (High Purity Graphite Powder).

Although times are changing, our enthusiasm for carbon will remain the same. Stay focused on SEC CARBON aiming for solid growth.



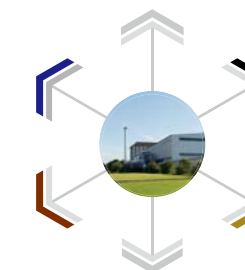
### THE PRIDE OF CARBON

The emblem is designed with the motif of a hexagon carbon crystal. The vertical axis indicates our aim for quality improvement and also environmental load reduction to the maximum extent. With this vertical axis in the center, the axes stretching toward four directions indicate our four product groups, which imply our determination to continue to grow with a good balance. Based on this concept, we strive for sound and healthy corporate management and continue our extensive contributions to society.



Product Lineup and Production Process

# Contribution to Industries with Highly-Functional Products Produced by Unique Technology and Production System



### SK-B, Graphitized Cathode Block for Aluminium Smelting

Highly Rated by Aluminium Smelters in the World

SK-B is the global standard of fully graphitized cathode blocks for the aluminium industry.



### Artificial Graphite Electrodes

Contributing to an Environmentally Friendly Society and Supporting Steel Making

SEC CARBON has been leading the development of large diameter electrodes in the mainstream market. We provide products with the most suitable quality for individual furnace operation conditions.



### Carbon & Graphite Specialties

High-Value-Added Products that Support World's Cutting-Edge Technologies

Carbon & Graphite specialties are machined into various shapes taking advantage of the excellent features of graphite. These products are used in cutting-edge industries and aerospace industry as well.



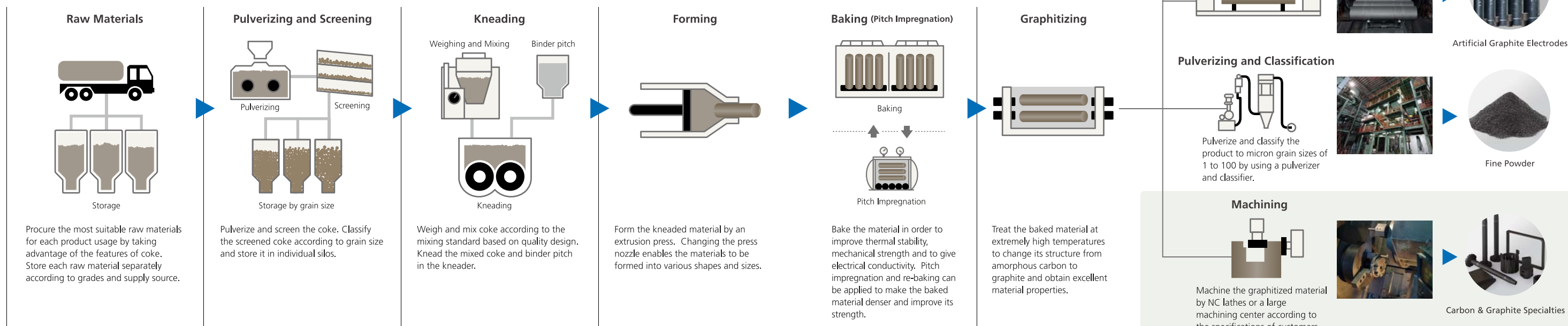
### Fine Powder

High Purity and Fineness with Wide Variations

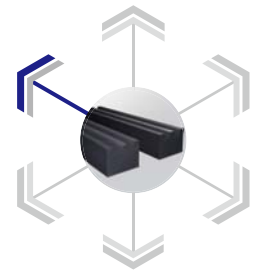
SEC CARBON proudly provides this world-class highly functional material. Our purification technology is based on thorough material research. Our integrated production system has realized stable supply of our fine powder.

## Achieving Solid Growth by Integrated Production System and Expansion at Kyoto Plant

One of the advantages of SEC CARBON is the production system that assures stable supply of high quality products. Kyoto Plant is our base of integrated production, while Okayama Plant is specialized for machining and specific impregnation of Carbon & Graphite specialties. At Kyoto Plant, a new production line dedicated for SK-B was commissioned in 2011. Continuously enhancing the production system, our company is aiming to spread the SEC CARBON brand further.







# Highly Rated by Aluminium Smelters in the World SK-B, Graphitized Cathode Block for Aluminium Smelting



## World Best Quality Cathode Block

Cathode block is the essential material for aluminium smelting. SEC CARBON has succeeded in commercial production of fully graphitized cathode blocks first in the world. Graphitizing of the entire cathode block produces excellent quality stability, thermal and electrical conductivity, anti-thermal shock and bath resistivity, compared to graphitic blocks or amorphous carbon blocks. These features have contributed to a significant improvement of production efficiency at aluminium smelters world-wide. SK-B is now recognized as the global standard of cathode blocks.

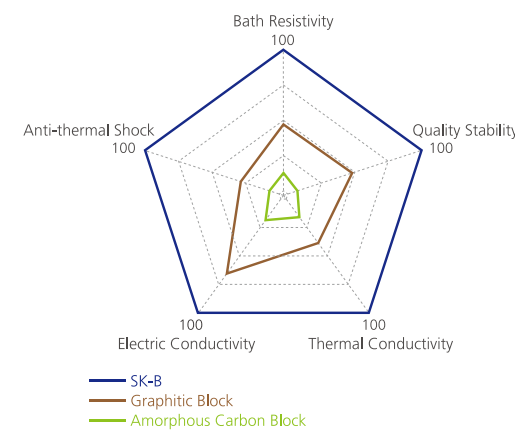


### Where is SK-B used ?

#### Used as negative electrodes (cathode blocks) in aluminium reduction cells

SK-B is used as negative electrodes (cathode blocks) in the electrolysis process to produce aluminium from alumina. High quality cathode blocks contribute to improving efficiency of aluminium smelting that consumes vast amounts of electricity. As demand for aluminium is rapidly increasing on a global scale, SK-B is expected to play a more significant role in this industry.

#### SK-B has excellent quality in all aspects [Quality Comparison of Cathode Block]



## Increasing Global Demand

Aluminium is a light weight and easily recyclable material. It is used in various fields, such as packaging, automotive, transportation, machinery and construction industries. Demand for this environmental friendly material has been rapidly increasing on a global scale. We support growth of the aluminium industry through supply of high quality SK-B.

## From New Production Line in Kyoto to the World

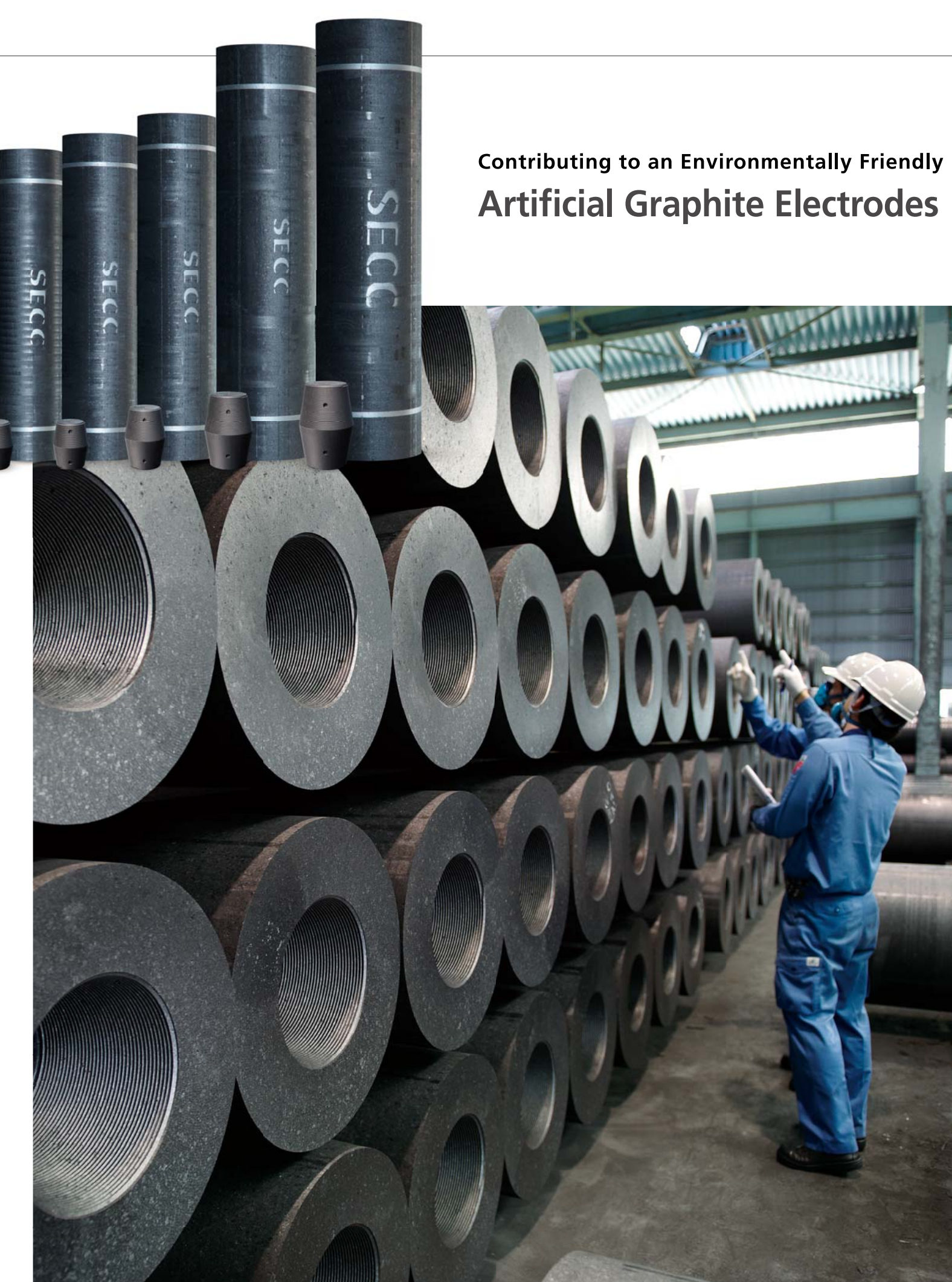
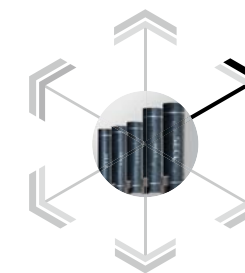
SEC CARBON has commissioned the new production line dedicated for SK-B within the site of the Kyoto Plant. The new line is designed to optimize production efficiency by arranging all processes in alignment. The centralized control room automatically regulates all operation parameters in the forming process from mixing of raw materials to production speed. With these facilities, we have committed ourselves to further improve consistency of our product quality. By adding the new line, our production capacity for SK-B increased up to 1.5 times. This is well-timed to respond to the increasing global demand.



Centralized control room



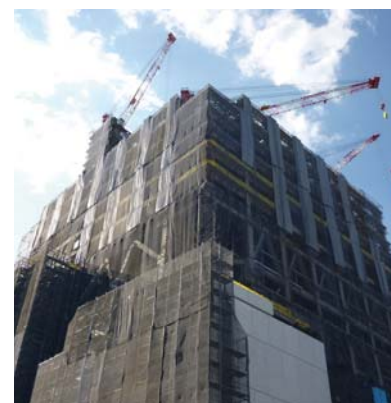
## Contributing to an Environmentally Friendly Society and Supporting Steel Making Artificial Graphite Electrodes



### Where are Artificial Graphite Electrodes used?

#### Used as electrodes in Electric Arc Furnaces (EAF) for steelmaking

EAF produces construction materials such as wide flange beams and rebars by melting steel scrap with electricity. The demand for the larger diameter electrodes has been increasing as EAF furnace sizes become larger. SEC CARBON always takes the lead in the development of large size electrodes. Today our electrodes are used in EAFs all over the world.



### Worldwide Reputation as a Pioneer of Large-Diameter Electrodes

In 1962, SEC CARBON succeeded in commercially producing graphite electrodes with a 24-inch diameter, the world's largest size at that time. Since then, SEC CARBON has built inherent trust as a pioneer of large-diameter electrode production. Our development capability and product quality have been widely recognized not only in Japan but also in the overseas market including the United States, Europe and rapidly growing Asian countries. Not content with the current situation, however, we continue our efforts to make significant contributions to the industry for energy cost reduction and productivity improvement through our high-quality graphite electrodes.



Machining line of Artificial Graphite Electrodes



Nipple machining line

### Technical Supports Proven by Broad Experience

Our indisputable technical support system is also one of the reasons why SEC CARBON has been able to establish the current position in the industry. We not only provide a wide range of products but also we are putting our focus on technical supports so that we can provide electrodes with optimum quality for operational conditions of individual customers.



Conducting technical discussions with customers throughout the world, SEC CARBON delivers graphite electrodes with optimum quality for users' needs.

### Export from Kyoto to the World

SEC CARBON Kyoto Plant has a 500,000 m<sup>2</sup> site just an hour drive from Hanshin (Osaka-Kobe) area. The location is very convenient not only for transporting our products to various places across Japan but also for export through major ports in the Hanshin area. Kyoto was selected as our production base at the early stage with a foresight to advance into the global market. Now the Kyoto Plant is playing a significant role in our export business.





# High-Value-Added Products that Support World's Cutting-Edge Technologies Carbon & Graphite Specialties



### Okayama Plant

Established in 1992, Okayama Plant has a 130,000m<sup>2</sup> site where Carbon & Graphite specialties are machined.

### Large-Size and Precise Machining at Okayama Plant using NC Lathes and a Large Machining Center

Okayama Plant conducts machining on Carbon & Graphite specialties. This plant is equipped with various precise processing machines such as a large machining center and NC lathes in order to correspond to large-size products as well as precise machining. On request, we undertake designing, supply of CAD drawings and high-precision machining. Special impregnation treatments required by various usages such as antioxidant treatment are also available.



NC lathe



Special impregnation equipment

### Precise and High-Precision Inspections according to User Specifications

We follow the strict inspection system according to the specifications of each user. Various dimensional inspections are conducted by using a 3D coordinating measuring machine and a high accuracy measuring machine.



3D coordinating measuring machine



### Where are Carbon & Graphite Specialties used ?

Used as important materials for various fields such as the semi conductor and aerospace industries

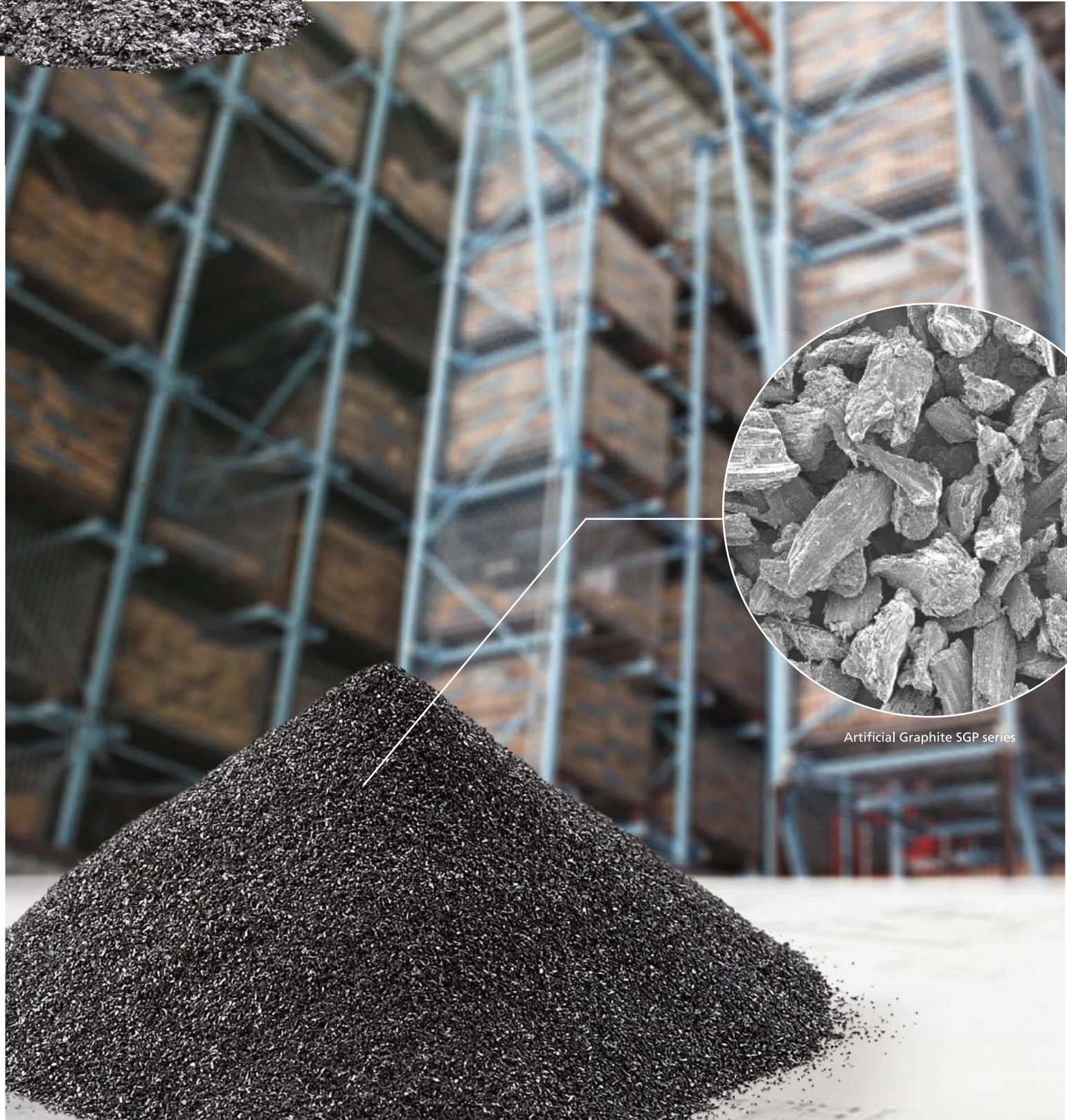
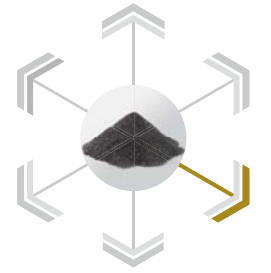
Our Carbon & Graphite specialties are supplied in various shapes. Graphite is a material that can be precisely machined. We take full advantage of such unique characteristics of graphite and other main functionalities such as high thermal resistance, thermal conductivity, anti-corrosion and lubricating property. Carbon & Graphite specialties are used alone or as composite with resin or metal in various fields including cutting-edge industries.

For Electrochemicals	For Ceramics	For Heat-Treating Furnaces	For Metallurgy
<ul style="list-style-type: none"> <li>• OA Machines</li> <li>• Aircrafts</li> <li>• Automobiles</li> </ul>	<ul style="list-style-type: none"> <li>• Molds</li> <li>• Glass</li> </ul>	<ul style="list-style-type: none"> <li>• Heating Elements</li> <li>• Crucibles</li> <li>• Industrial Machineries</li> <li>• Rolls</li> </ul>	<ul style="list-style-type: none"> <li>• Rotors</li> <li>• Ferrous and Non-ferrous Metals</li> <li>• Automobiles</li> </ul>

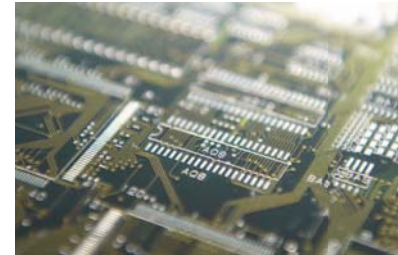




## High Purity and Fineness with Wide Variations Fine Powder



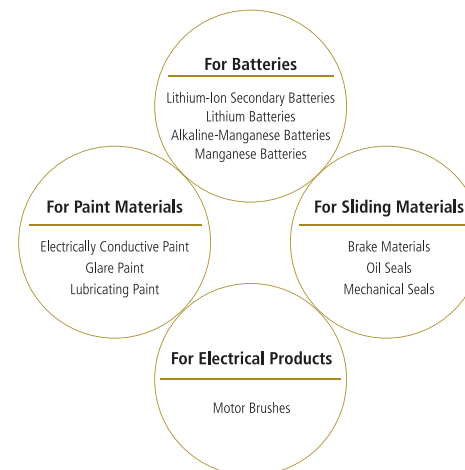
Artificial Graphite SGP series



### Where is Fine Powder used ?

#### Used as raw materials for batteries and automobile paint

Fine powder is graphite powder with high purity. Through our unique research and development, this sophisticated product was developed. Until this advancement, conventional graphite powder products had difficulties in realizing uniform quality and stable supply. Our fine powder is actively being utilized in the latest Cutting-Edge industries, such as electrode materials of lithium-ion secondary batteries.

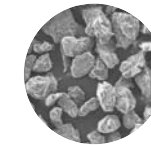


### Unique Product with High Purity and High Crystallinity at Micron Levels from 1 to 100

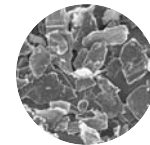
Since 1986 when the first powder plant was established, SEC CARBON has provided fine powder that plays a role in our business with its extremely high purity and excellent high crystallinity. A wide range of series has been offered at micron levels from 1 to 100, so that customers can make their own choices according to their use. Our powder products include the one that has a 99.999% of super-high purity (five nines). As times advance, SEC CARBON fine powder is being actively utilized in diverse industries for such things as paint, sliding materials, metallurgic uses, and batteries.



Artificial Graphite, SGP Series



Artificial Graphite, SGL Series



Natural Graphite, SNO Series

### Precise Manufacturing Process for Fine Quality Products

Fine powder is produced by an integrated production system from raw material treatment to finished products by fully utilizing the latest cutting-edge production equipment and our unique high-level machining technology. Under the consolidated manufacturing management, raw materials are pulverized to micron levels of 1 to 100 by ultrafine pulverization and classification equipment according to each desired usage. Through the classification process, the raw material is made into sophisticated products.



Integrated Pulverization Process Management

### Strict Quality Control Systems and Continuous Technology Development

Stable grain size and consistent quality, these are the lifeline of fine powder. Fully-equipped with the latest and most-advanced inspection equipment, SEC CARBON repeatedly performs physical testing and analysis. In accordance with the unique and strict quality standards, SEC CARBON performs inspections consisting of the following three stages: the receiving inspection of raw materials, the in-process inspection conducted during each process, and the finished-product inspection. Aggressively working on technological development, our goal is to realize further high quality.



Measurement of Specific Surface Area

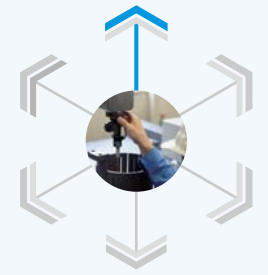


Product inspection by Electronic Microscope



## Building Trust by Strict Control and Stable Production Quality Control

## Creating Future Technologies Research & Development



SEC CARBON has obtained certification of the international standard for quality management system, ISO 9001. In addition, never being satisfied with the current situation we promote QC circle activities to keep improving the quality of our work. Through such persistent efforts we have gained the trust of worldwide customers.



SEC CARBON actively promotes the establishment of an original R&D system. We also conduct technology development in collaboration with academic institutions. Furthermore, utilizing feedback information from such collaborations, we develop new products and improve product quality in order to continuously enhance customer satisfaction.

### ISO 9001 - A Sign of Reliable Manufacturer

We promoted efforts to obtain the certification of ISO 9000 series from the early stages and obtained ISO 9001 certification for all products manufactured at the Kyoto Plant. SEC CARBON is known at home and overseas as a company that has the system to provide products with a high level customer satisfaction.



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Quality management system accredited in 1994

### QC Circle Activities to Improve Quality of Work and Administration

SEC CARBON has continued QC circle activities (MAP activities). Supporting these activities, we pursue human resource development and encourage employees to enhance their abilities and skills, as well as to achieve self-realization. The circles gather periodically to make presentations on outcomes of their activities. High-level circles may challenge external competitions. These activities have certainly led to the improvement of quality of our work and administration, in addition to receiving prestigious awards.



MAP Activities Competition

### Thorough Quality Control by Strict Inspections

SEC CARBON carries out thorough quality control. All products are checked by operators on site and also inspected by the most advanced testing devices. We perform inspections consisting of the following three stages in accordance with our own strict quality standards: the receiving inspection of raw materials, the in-process inspection conducted during each production process, and the finished-product inspection. Only products with reliable quality are delivered to our customers after passing these strict inspections.



Strict three-stage inspections

### Test Analysis

Rigorous analysis is carried out at the elemental level using X-ray diffraction instruments and electronic microscopes. We always strive to deliver the best quality product to our customers.



### Research

We have devoted ourselves to determine mechanisms to extend the life of our product. We take opportunities at domestic and international conferences to present our research results to promote our capability in technology development and attain trust of the customers.



### Development

We are developing new products utilizing the apparatus that can reproduce the environment where our product is used, such as evaluation system for molten salt electrolysis.



### User Support

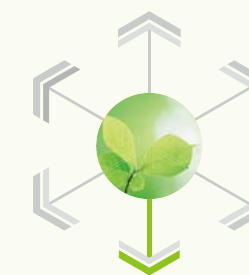
We extend finely-tuned supports to our customers including technical follow up, so that our product can be properly used. We always listen to customer voices to build a long lasting business relationship with them.





# Environmental Preservation Activities as a Manufacturer's Responsibility

## Environmental Preservation Activity



Considering preservation of the environment and safety as our responsibilities, we conduct our business activities to harmonize with the global environment and societies. Atmosphere, water quality and work environments are periodically measured at our plants for continuous improvement. We strive to reduce the environmental load in all processes from product design and manufacturing, to disposal of waste.

### Compliance with Strict Regional Agreement and ISO 14001 Certification

Kyoto Plant complies with the regional environmental preservation agreement which is stricter than the national regulations. We set the following three pillars as our basic policies: pollution prevention, energy saving, and recycling. SEC CARBON has obtained certification of the international standard for environment management system, ISO 14001. Promoting environment-friendly activities in all aspects including product development, evaluation, sales and technical services, we proactively contribute to regional and global environmental preservation.

Pollution Prevention

Energy Saving

Recycling

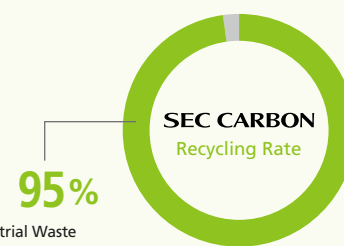


JQA-0379 Kyoto Plant  
JQA-EM0678 Kyoto Plant

Based on these three basic policies, we fulfill corporate social responsibilities.

### Challenge to Zero Emission for the Shift to the Recycling-oriented Society

At the Kyoto Plant, we have promoted recycling of industrial waste generated in the manufacturing process (raw materials for cement or road bed materials), waste of packaging materials generated in the plant (high-calorie briquette fuel) and general waste from business activities. Now most of the wastes from our plants are recyclable. We will continue zero-emission activities to reduce the environmental load.



### Evolving into the Energy-Saving Company Promoting Various Environmental Preservation Activities

Amid calls for energy saving, we set targets for energy reduction and Green Purchasing. Additionally, every year we participate in the "Light-Down Campaign". We promote a wide variety of environmental preservation activities by taking an active part in "Kyoto Eco-Point Model Business" of the CO<sub>2</sub> Reduction Bank launched by Kyoto Prefecture. Furthermore, we regularly conduct cleanup activities of the neighborhood to make regional contributions.



Neighborhood cleanup activities on a regular basis

### Kyoto Plant designed by the concept of energy saving and environmental preservation

#### Gas Treatment Facility

We have reinforced the capacity of our gas treatment facility to reduce emission of harmful gas.



#### Water Treatment Facility

Water treatment capacity has been reinforced. Gas cooling water recycling also reduces the total amount of water used in the entire plant.



#### Shift from Fuel Oil to Natural Gas

We have introduced natural gas to fuel our new baking furnaces and succeeded in reducing CO<sub>2</sub> emission by 30%.



#### Electric Dust Collector

The latest electric dust collectors have been introduced to collect fine dust using static electricity. We continue to contribute to the improvement of the regional environment.

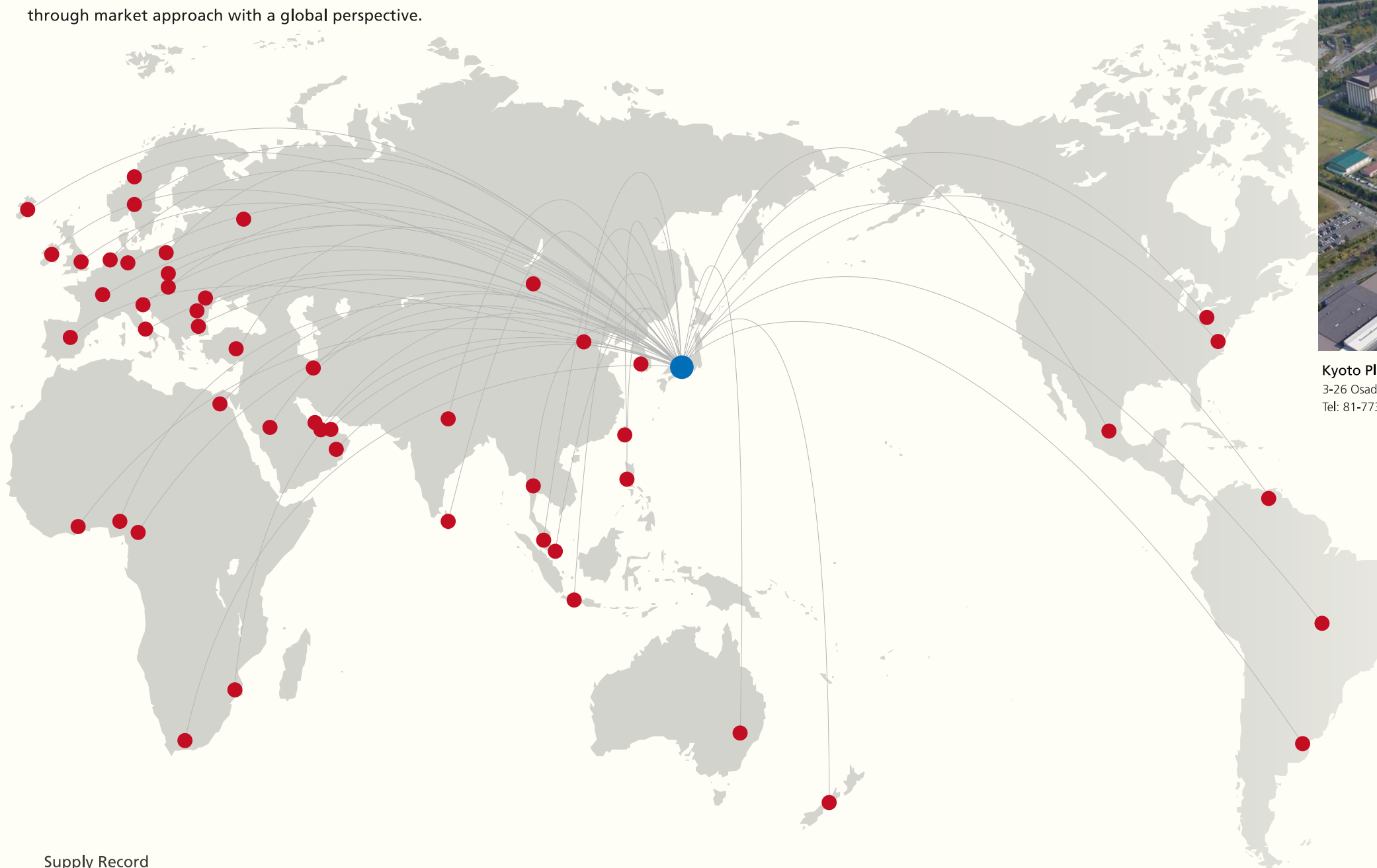




## Delivering Solutions and Building Trust on Global Scale

# Global Supply Record

We not only merely deliver high-quality products, but also we deliver solutions as a technical supporter. SEC CARBON has now supplied various products to more than 40 countries in the world and has acquired an excellent reputation in all of these countries. We wish to continue contributing to the development of world economy through market approach with a global perspective.



### Supply Record

Argentina	Canada	Ghana	Ireland	Mozambique	Philippines	Singapore	Sweden	U.S.A.
Australia	China	Greece	Italy	Netherlands	Poland	Slovakia	Taiwan	Venezuela
Bahrain	Czech	Iceland	Korea	New Zealand	Qatar	Slovenia	Thailand	
Brazil	Egypt	India	Malaysia	Nigeria	Romania	South Africa	Turkey	
Bulgaria	France	Indonesia	Mexico	Norway	Russia	Spain	U.A.E.	
Cameroon	Germany	Iran	Mongolia	Oman	Saudi Arabia	Sri Lanka	United Kingdom	

### The world top class integrated carbon plant with a site area of 500,000m<sup>2</sup>



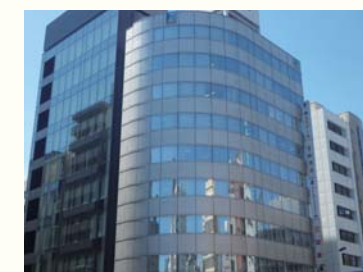
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