



Corporate Profile

**Creating New Values through Collective Strength**

The Covalent Group, to provide users of our products and services with absolute value, bonds these 6 strengths:

**Materials**

that are backed by 80 years of experience and a wealth of expertise.

**Flexibility**

that foresees new trends and implements change with skill and speed.

**Response**

which meets the needs of high-level customers with detailed solutions.

**Innovation**

that challenges what others think impossible with new breakthroughs.

**Production**

that delivers excellent products to the world, on time and in volume.

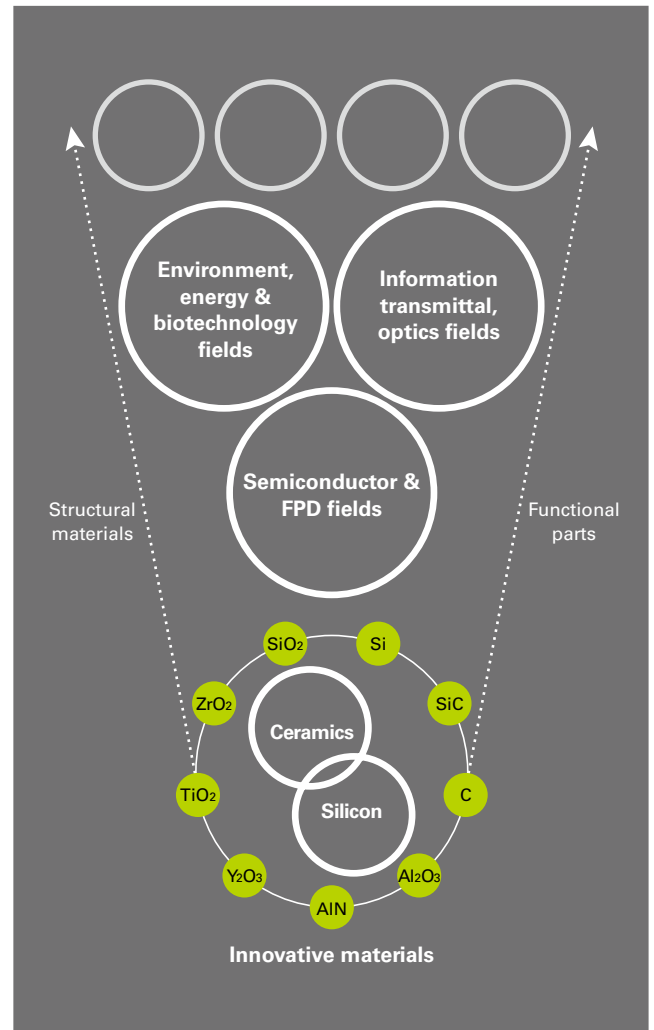
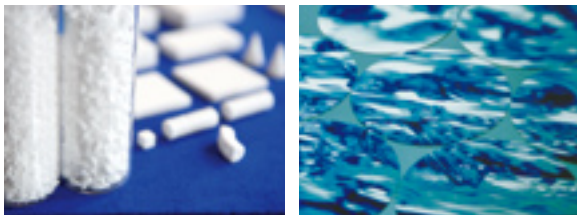
**Organization**

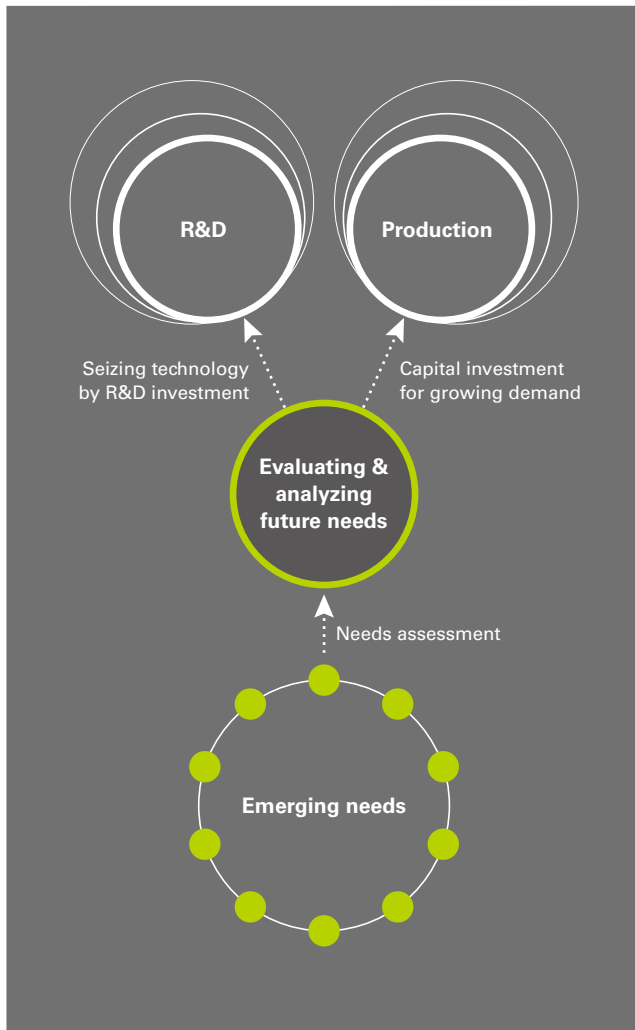
that breaks down barriers between fields to innovate the best solutions.

**From ceramics to silicon:  
endless possibilities for the world's leading  
edge production facilities**

From semiconductors to flat panel displays and information transmittal, optics, environment, energy and biotechnology, today's high-efficiency and leading-edge production facilities are being asked to manufacture products in shorter time spans. To meet these demands, production systems and processes must perform with a high degree of precision and without any loss.

At the Covalent Group, we have accumulated a wealth of expertise and developed a high level of technical prowess in ceramics and silicon, which are indispensable materials in the products and manufacturing processes of leading-edge fields. Our mission is to discover unknown potential in materials as we respond to the issues of advanced industries, and in doing so we fulfill a unique position as a comprehensive materials maker at the forefront of technology. After completely understanding the special characteristics of a material, we consider new ways to apply it, and aim to create epoch-making materials and parts that have functions and structures that have not been seen before.





**Grasping trends in the market, we introduce new values with a dynamic investment strategy to respond to changes in a volatile market.**

A global market presents many chances for rapid expansion into new markets with the introduction of innovative technology and new products. However, competition is fierce and product life cycles have become shorter. In such a market environment, our users demand swift product development for early market introduction. Therefore our speed-to-market stance drives the flexibility behind our materials development, while at the same time we ensure a stable product supply.

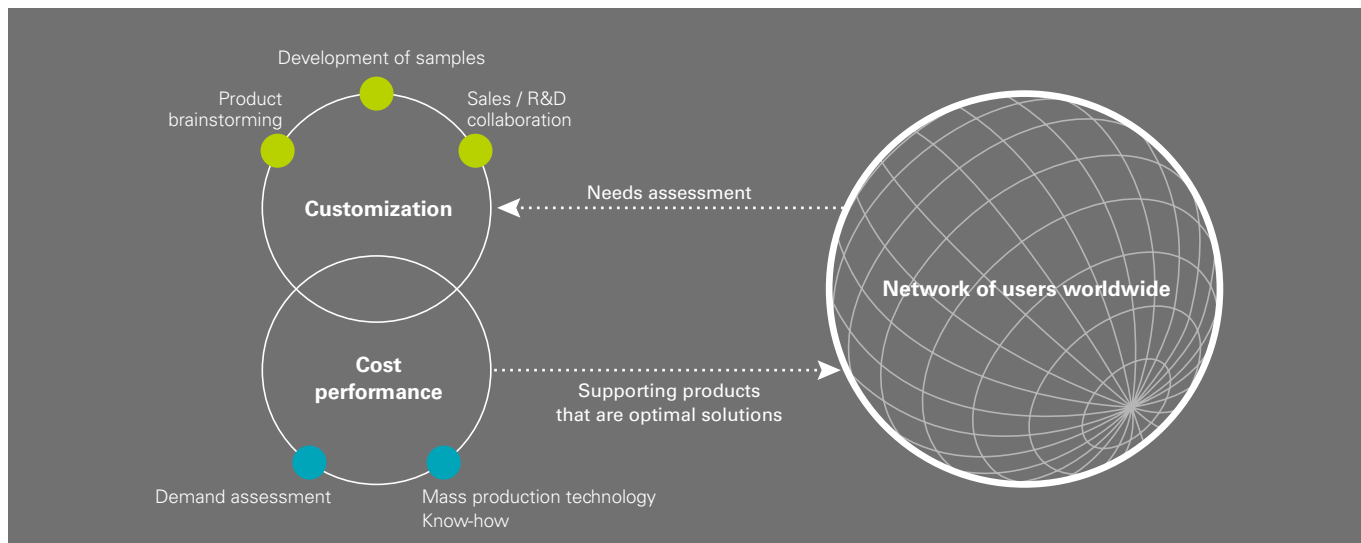
The Covalent Group became independent from the Toshiba Group in 2006 through a management buyout. As an autonomous company, we develop our business in anticipation of future changes and invest in bold strategies. The Company acts as a partner in the development of products over the medium and long terms with respect to both R&D and facility innovation. We understand users' issues as we develop new materials and components, and design the most suitable solutions in a timely, flexible manner.



Customization

# Response

Cost effectiveness



## Customization and cost-effectiveness

At the Covalent Group, our Sales and R&D divisions collaborate to address the particular needs of the users of our products. Teams from both divisions work together from the research stage to product trial runs. Product samples are developed to support a theme, and materials and parts are evaluated according to how they will support new product development and new efficiencies. The Covalent Group fulfills development and production activities from upstream operations to the supply of customized, value-added products.

The more customized the product, the less cost effective it can be. However, at the Covalent Group, we use our network

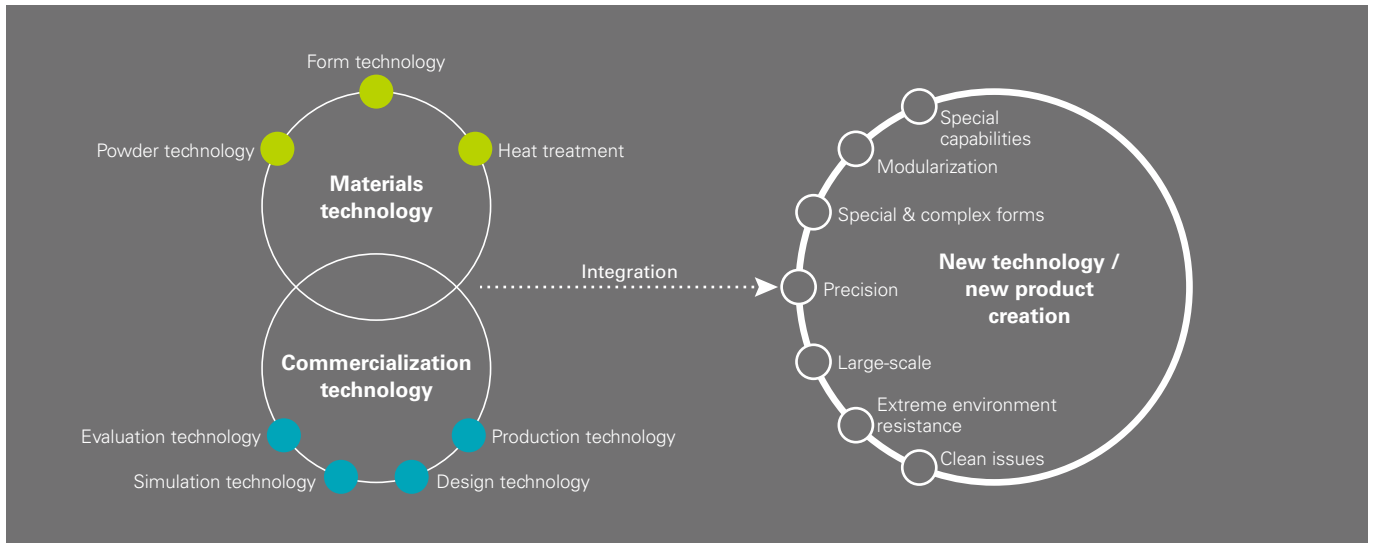
of users worldwide to assess product demand and analyze clusters. Depending on the types of clusters, we implement our R&D and production functions according to the most efficient placement. This allows us to provide the highest quality while satisfying cost efficiency. We have gained eminent praise among our products' users for high added value combined with cost performance in products that use silicon carbide, such as annealed wafers and semiconductors. In fact, it is this model which has allowed us to command the world's largest share as a silicon carbide producer for such products.



Broad technology

# Innovation

Continuous inquiry



## Integrating materials technology with commercialization technology

At the Covalent Group, our proprietary expertise is in technology related to silicon, silica, aluminum and other inorganic phosphorus compounds used in semiconductor materials. By adding traditional heat-resistant properties to these materials, we develop new materials that have specialized optical or electrical functions or those which can be used in extreme environments. This technology is integrated with our commercialization technologies, including design which uses computer simulation and other highly sensitive evaluation analysis, and precision manufacturing or

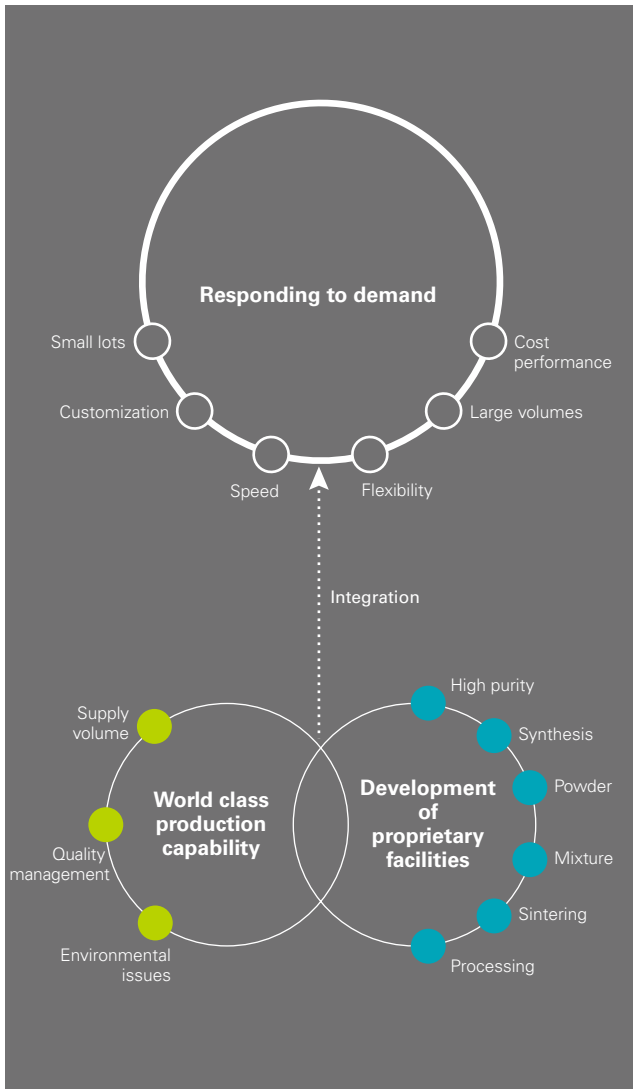
thin membrane formation technology. With the integration of our materials and commercialization technologies, we create nanoscale precision parts and complex forms, defying what had been considered impossible up to now. The results of these developments reflect speedy manufacturing at the forefront of innovation. With market, technology and application forming the corners of a triangle, we look for opportunities to expand our domains and build our portfolio, with each employee actively involved in thinking of ways to apply developments to future needs.



### Technology Development Center

At the Technology Development Center, we conduct materials research and basic research according to medium and long term technology trends, as forecast by business assessment surveys. Product development using the technologies of molecular analysis, structural analysis, and simulation technology comprise the activities of the Core Technology Center.

# Production



## Developing proprietary facilities for quick turnaround of high-quality products

The Covalent Group commands the world's top share in the field of semiconductor products. In Japan, our facilities consist of a network of three business centers and five Group R&D and manufacturing centers. We apply leading-edge methods to improve our manufacturing processes, and at the same time we vigorously manage quality and environmental policies. We have applied leading-edge methods to improve our manufacturing processes, while at the same time we have vigorously enforced quality and environmental policies. We have also optimized the application of simulation technology to the production process and enhanced the management of our supply chains in our commitment to total manufacturing improvement.

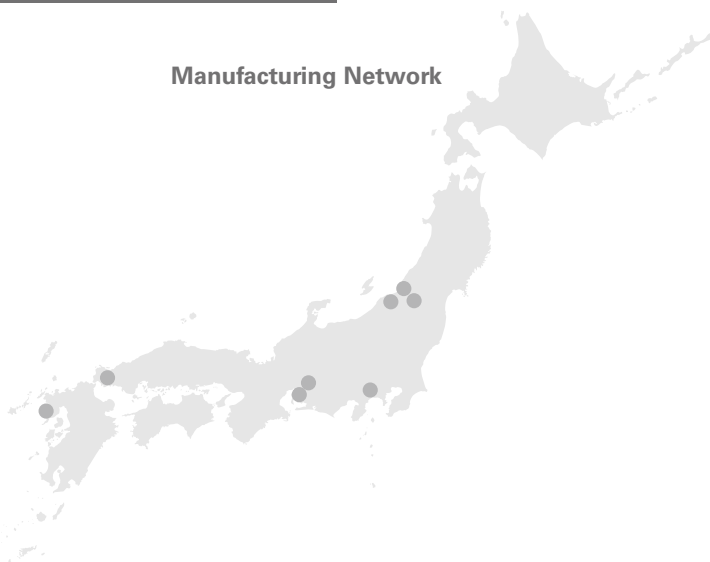
Furthermore, in order to gauge our proprietary strength, production advantages and cost effectiveness in manufacturing, we have developed various internal production mechanisms. By using these, we have been able to reorganize and upgrade in a flexible manner. We are able to respond to the various needs of customers quickly and with exacting precision, starting with changes in product specs.



### 300mm Wafer production line

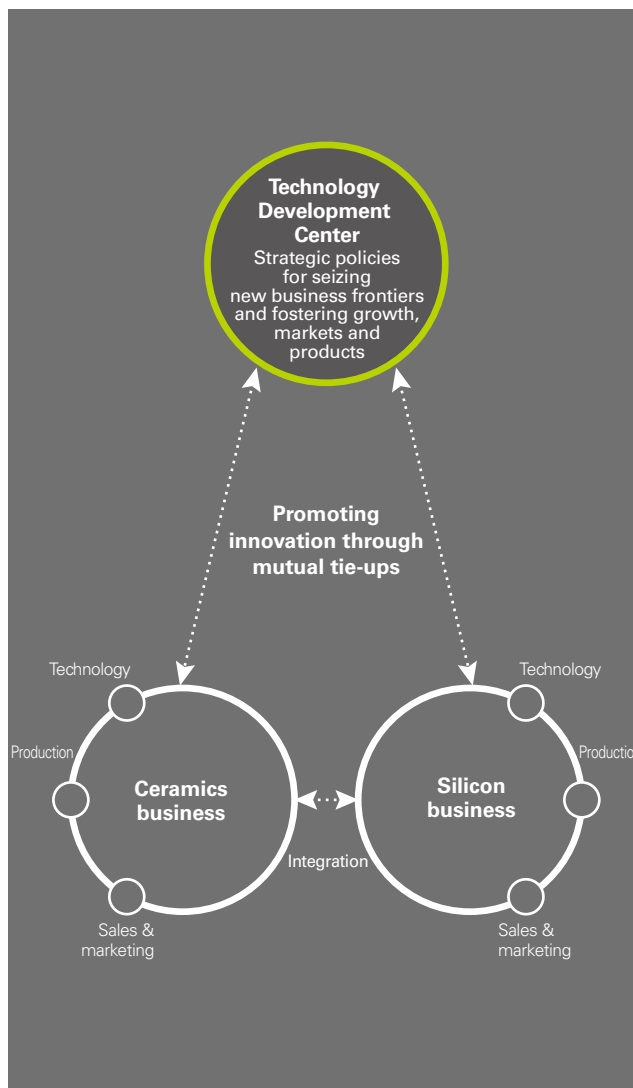
Responding to the robust demands in the market of 300mm silicon wafers centered on annealed wafers, Covalent Silicon has introduced a state-of-art production line capable of a monthly output of 150,000 wafers.

## Manufacturing Network



### Perpetual innovation through cooperative organization creates new businesses

At the Covalent Group, we have a corporate culture that elevates the motivation of each employee, and our organization allows management to be flexible and autonomous within our two main businesses, ceramics and silicon. In the ceramics business, our facilities operate in an organic fashion to integrate the development, production and marketing of high value-added materials, while our silicon business, which is concentrated at and developed by Covalent Silicon in Niigata, responds to market conditions with a dynamic management. Since the two businesses have their own individual functions for technology, production, management and marketing, the Covalent Group is able to develop and supply products that follow the market's needs precisely as they change very fast. Furthermore, we have set up the Technology Development Center to promote product development and cultivate new businesses throughout the entire organization in a cross-sectional manner that goes beyond existing business frameworks. At the Center, we set mid- and long-term technology strategies for the development of new technologies and business opportunities, and we create high value-added businesses by forming tie-ups throughout our entire organization. In this manner, each facility performs actively and employees are motivated through collaboration, which in turn fosters the wellspring that drives innovation.



### Marketing Network



**Committed to the Earth’s environment**

**Aiming for continual symbiosis with the Earth’s environment**

Human safety and environmental conservation are two of the most important issues for the Covalent Group. We have constructed environmental management systems at all of our production facilities, and we are continuously aiming to improve environmental performance. The Covalent Group is committed to the development of eco-products that will not burden the environment, and we assess the technological and economic feasibility of these developments. We will continue to further promote environmental conservation activities.



Oguni Facility

**Corporate citizenship: Contributing to the development of society with our stakeholders**

As stakeholders’ concerns and sense of values become increasingly diversified, other considerations have factored into a company’s growth rather than just sales, profits and other economic aspects. It has become essential to consider product safety, environmental impact, compliance, human rights and employment issues, which all together form the basis of corporate social responsibility.

The Covalent Group works to fulfill its social responsibility to all of our stakeholders, and we are actively engaged in environmental conservation and activities that contribute to society.



**Committed to local communities**

**Forging partnerships and improving ties with local communities**



Cleanup drive



Students touring the workplace

At the Covalent Group, we understand the necessity of being a responsible member of the communities in which we do business. Based on our policy of social contribution, we work with local communities to contribute to the harmony of society. At each of our facilities, we are actively involved in promoting green life and keeping water areas beautiful by initiating regular cleanup drives and contributing to environmental improvement. Our social participation includes holding local events and inviting middle and high school students to our facility for a hands-on workplace tour. These are some of the ways in which we make an effort to reach out and interact with the residents of the communities in which we do business.

**Committed to employees**

**A work environment that features safety, diversity and soundness**

Based on the idea that individual growth and self reliance lead to the collective strength of the organization, Covalent Group employees advance on a career path that they are able to control, they are recruited from within the Company, and they are protected by a whistleblower protection system. Employees receive training and education suitable for their careers on a periodic basis. The Covalent Group respects people’s basic human rights, and without regard to nationality, gender or disability, the Company encourages self growth and supports active participation from all employees. We have set up a safety and hygiene management system based on our policy for workers’ occupational safety and health, and created a highly sound and comfortable work environment that is conducive to creativity and efficiency while promoting the health of our employees and workplace disaster prevention.



Mental health workshop



Semiconductor  
Field

Flat Panel Display  
Field



### Product introduction

Responding to leading-edge  
high performance products



Environment,  
Energy &  
Biotechnology  
Fields

Other  
Industrial Fields





## Brands trusted by the world

### High value-added wafers support high-performance semiconductors

The performance demanded of semiconductors has jumped dramatically, and as devices become more and more miniaturized, requirements for particle-free, ultra-flat and larger diameter silicon wafers have increased. At the Covalent Group, we are committed to the development of precise heat treatment technology and high value-added products. From single-crystal pulling to surface treatment, cleaning and packing, we have a system that controls production and quality from start-to-finish. Even with the mass production of our 300mm wafers, we deliver reliability and the highest quality to our customers throughout the world.

#### Product lineup

- Polished Wafer
- Annealed wafers (Hi-WAFER, Hyper Hi-WAFER, AT Wafer)
- Epitaxial Wafer
- Diffused Wafer
- SOI Wafer

### Product solutions

For flash memory DRAM, M/ROM, SRAM, SOC CPU, MPU

#### Annealed Wafer



The annealed wafer that we developed has an ultra-flat crystal surface, which enhances and normalizes performance in device active layers due to its flawless surface. These are widely used for leading-edge devices with gate lengths of 0.13 $\mu\text{m}$  or less. The Hyper Hi-WAFER has excellent performance due to improved crystal technology, optimized heat treatment in hydrogen ambient and advanced production technology when compared to traditional Hi wafers. And the AT wafer, with its high-quality substrate treated with argon, has a flawless surface and superior gettering capability.

For power MOS-FET, MOS-FET, Power transistor, IGBT, Schottky diode

#### Epitaxial Wafer



Epitaxial wafers, which are made by growing single crystals on a polished wafer surface by vapor process, are used for discrete devices such as MOS and bipolar transistors and diodes. At Covalent Group, demand is increasing for our multi-layered, diffused epitaxial wafers. Multi-layered epitaxial wafers and very thickly layered epitaxial wafers are widely used for electrical power management devices as they contribute to energy efficiency.

#### Diffused Wafer

Our diffused wafer, which has one polished surface, is used primarily for Pw MOS-FET and bipolar transistors. The concentration and depth of diffused layers of the wafers are controlled with precision in the manufacturing process, making them energy-efficient at the user's production end. There have been many favorable reputation on the products' advantages regarding device design. Diffused wafers are used for electrical power management devices, and they contribute to efficient energy usage.

For CMOS, MEMS

#### SOI Wafer



Our thick SOI (Silicon On Insulator) wafers are used for Bi-CMOS and power devices due to its advantages of high voltage endurance, high speed performance and low energy consumption. In the production of thick SOI wafers at the Covalent Group, a bonding method is used and the BOX film in the SOI film is controlled with high precision. The demand for SOI wafers in leading-edge devices such as microprocessors, which require high speed performance and low energy consumption, is also increasing. In response to these needs, we have started developing ultra-thin film SOI wafers.

## Highly integrated semiconductors, parts that revolutionize the production process

The Covalent Group develops and supplies materials and parts that are necessary in the production of semiconductors including quartz glass and silicon carbide products and highly functional varieties of fine ceramic products and synthetic quartz products. Our expertise in proprietary, high-purity technology and large-scale, precision and modular shapes and structures for manufacturing, as well as issues related to the production process, puts us in a position to recommend specialized applications. These quality parts, which have contributed to highly integrated semiconductors and improved production, have led to a high degree of trust among our products' users while also allowing us to command a top market share for many of these products.

### Product lineup

- High purity quartz glass products
- TPSS silicon carbide ceramics
- Special carbon, high-purity graphite products
- CEPURE In-line gas filter
- BREAK FILTER Vacuum-Break Filters
- SOFVAC FILTER Vacuum-Exhaust Filters
- EXERIA high-purity yttria ceramics
- SAPPHAL high-purity alumina ceramics
- ADS high-purity alumina ceramics
- High-purity single crystal silicon parts
- CERASIC atmospheric pressure sintered SiC

### Product solutions



## Flat Panel Display Field



# Contributing to higher resolutions and better production of large panel displays

## Glass substrates that meet the needs of larger sizes

Flat panel display (FPD) screens continue to increase in size while components for glass substrates advance in tandem, making higher precision and parts for the manufacturing process a necessity. Strategic products that contribute to enhanced exposure of minute circuits, from synthetic quartz photomask substrates to the BREAK FILTER Vacuum-Break Filter and atmospheric pressure sintered SiC ceramics, are used to rationalize and streamline the FPD manufacturing process. The Covalent Group supports this manufacturing process with a wide range of products, and thanks to our users, we have earned a high reputation for them.

### Product lineup

- BREAK FILTER Vacuum-Break Filters
- SOFVAC FILTER Vacuum-Exhaust Filters
- Large photomask substrates for LCD display production
- CERASIC atmospheric pressure sintered SiC
- GLASSUN roll
- Large quartz chambers

## Product solutions

### BREAK FILTER Vacuum-Break Filters



Using the pressure buffer effects of porous ceramics, this filter regulates the airflow in vacuum breaking (the action of returning to normal pressure when a vacuum is created inside a device). They are employed for reducing particles and preventing particle outbreak. From increasing yields of semiconductor etching to applications of large LCD displays, their use is widely gaining ground.

### Large photomask substrates for LCD display production

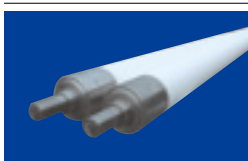


The Covalent Group's large sized photomask substrate for liquid crystal display production has extremely high purity and homogeneity and excellent ultraviolet penetration, and one-tenth or less the metal impurities found in natural quartz. As a synthetic quartz material, there is a low amount of thermal expansion, and it has been a factor in realizing high-precision pattern etching.

### CERASIC atmospheric pressure sintered SiC stage parts

CERASIC is a ceramic material that is nearly as hard as a diamond, yet also lightweight. As a material for lightweight support racks (stages), it is ultra-flat and does not warp or bend, enabling it to maintain precise exposures. It has a very high reputation among the LCD industry.

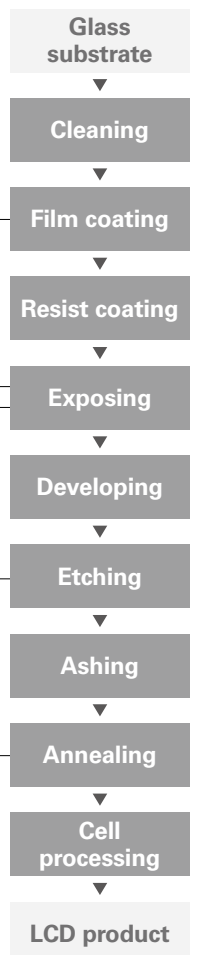
### GLASSUN roll



This product is used as a roller to convey TFT array substrates. It uses highly pure silica glass to prevent contamination from metal impurities and damage from particles. For the same reason, it is also used for the conveyance of FPD sheet glass.

### Large quartz chambers

Quartz chambers are used as batch furnaces inside heat treatment systems for thin film transistor (TFT) array substrates. Quartz is capable of keeping outbreaks of particulate matter to an absolute minimum, and it also contributes to the inhibition of metal contamination.



## Supporting the environment and leading-edge medical fields

### Fulfilling proprietary ceramic developments

The 21st Century has been called the century of the environment, and accordingly, technological development related to the environment has become a common social theme throughout the world as markets continue to expand. As a parts maker positioned at the upstream of the manufacturing process, the Covalent Group has taken an early initiative to promote environmental conservation and reduce environmental impact by developing new products that tackle environmental and energy problems. And, as Japan and other societies welcome an aging population, our interest in biotechnology continues to grow. We are using our world-class materials and manufacturing technologies to develop bio-related products.

#### Product lineup

- CERASIC atmospheric pressure sintered SiC
- Silicon crucibles for solar battery manufacturing
- NEOBONE artificial ceramic bone material
- Ceramic products for regenerative medicine

### Product solutions

#### CERASIC atmospheric pressure sintered SiC heat exchange tube

Recently, cities and towns in Japan have introduced crucible-type incinerators that emit almost no dioxin gases. CERASIC atmospheric pressure sintered SiC is a superior ceramic material that maintains strength and anti-corrosive properties under high temperatures and has excellent heat conduction, and it is used inside new incinerators to collect and reuse heat in large heat exchange tubes. In extreme environments that metals and other materials are unable to withstand, CERASIC does not distort or corrode, and it suppresses dioxin, thereby realizing energy savings.



#### Silicon crucibles for solar battery manufacturing

As a form of clean energy, solar power continues to grow in popularity, and multi-crystal silicon solar batteries are entering the mainstream due to their excellent cost effectiveness. The Covalent Group supplies domestic and international makers of solar power batteries with the crucibles that are necessary for producing multi-crystal silicon ingots, a key ingredient in the manufacture of these batteries. The main ingredient used to produce the crucibles is highly pure silica, which is resistant to thermal shock and is susceptible to only a bare minimum of polysilicon contamination.



#### NEOBONE artificial ceramic bone filler material

NEOBONE is an artificial bone filler material composed of porous ceramic which aids in the quick regeneration of bone once it has been implanted into living tissue. In clinical trials, NEOBONE was applied to a variety of patients, and in none of the cases was post-inflammatory reaction after implantation confirmed. Furthermore, within just two months, over half of the cases exhibited hardened bone growth in the implanted parts, demonstrating the safety and superior bone conduction capabilities of our product.



#### Ceramic products for regenerative medicine

Our proprietary foaming process produces a highly porous ceramic material that is suitable for growing three-dimensional cell cultures. The special features of this porous material are its large holes and interconnected structure, which enable cell cultures to penetrate deeply and easily into the substrate, and its ability to grow high-density cells. As a ceramic material that includes the highly safe hydroxyapatite, it is possible to select ingredients for production which are compatible with cell cultivation, such as  $\beta$ -TCP, alumina, zirconia or titania.





## Support for many industries with our products and services

### Cultivating our technologies, employing our expertise

Starting with inorganic materials at the core of our business, the Covalent Group leads trends by developing innovative products. We support many different industries with a variety of products and services, using our in-depth knowledge of raw materials combined with an abundance of know-how.

#### Product lineup

- QCH-HEATER
- CERASIC atmospheric pressure sintered SiC
- GLASSUN fused silica refractories
- Carbon brushes
- TECORUNDUM silicon carbide heating elements
- Kiln furniture for sintering electronic parts
- Monolithic refractories
- Refractories for the glass industry
- SOFVAC FILTER Vacuum-Exhaust Filters

### Product solutions

#### QCH-HEATER



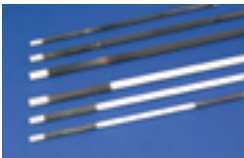
The QCH-HEATER (Quartz Carbon Hybrid-HEATER) consists of quartz glass tubing which encases a high-purity carbon wire heating element that has excellent responsiveness. It can be designed in a variety of forms. In addition to its use in normal atmosphere conditions, it can be used in vacuum and liquid environments. Since its radiance peak is in the mid-infrared spectrum, it is suitable for heating glass, resin and metals, and because it is a non-contact form of heat produced by light, is an environmentally clean form of heat.

#### Carbon brushes



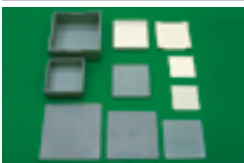
Carbon brushes play a very important role as components that provide the electric current to revolving motors. Our carbon brushes are widely used in various types of motors from automobiles to household appliances and computer peripherals. In addition, we have developed lead-free brushes in consideration of the environment, which has gained the support of many users.

#### TECORUNDUM silicon carbide heating elements



Teccorundum non-metallic heating elements are made of recrystallized silicon carbide and can be used at high temperatures up to 1600°C. Compared to Nichrome wire, it has a higher heat value per unit area and can heat up in a shorter amount of time. The elements have a long life, are easy to use, and have a wide variety of heat treatment applications including electronic component heat treatment, sintering of metal powders, wire rod annealing, and melting of glass and other substances. Elements can be specially coated to allow performance in extreme environments. Coating options include SiC (TECCORUNDUM SC) which offers protection from severe furnace conditions and has greater longevity. Other products have improved anti-oxidation properties.

#### Recrystallized SiC ceramics for sintering electronic parts



The use of recrystallized SiC ceramics has resulted in shortened heating and cooling times and improvements in temperature conduction due to the ceramics' lighter weight and lower heat capacity, which makes it possible to improve manufacturing efficiency. Furthermore, the long life span of the product makes it possible to reduce labor and costs related to replacements, which in turn contributes to the reduction of waste.

## Registered name

Covalent Materials Corporation

## Headquarters

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6-3, Ohsaki 1-chome  
Shinagawa-ku, Tokyo 141-0032 Japan  
Tel: +81-3-5437-8411 Fax: +81-3-5437-7172

## Capital

¥ 34.9 billion

## No. of employees

(Covalent Materials) 1,499 (Consolidated) 3,034

## Facilities and Branches

### Oguni Facility

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### Hatano Facility - Technology Development Center

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### Kariya Facility

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### Kyushu Branch

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### Kansai Branch

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### Chubu Branch

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### Tohoku Branch

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## Affiliated companies (Japan)

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### Covalent Materials Tokuyama Corporation

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### Covalent Materials Nagasaki Corporation

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### Covalent Materials Sekikawa Corporation

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### Covalent Sales Corporation

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### Tokai Ceramics Co., Ltd.

308-1, Shidare-cho, Yoshibora Toyota, Aichi 470-0308 Japan  
Tel: +81-565-45-0611 Fax: +81-565-45-8066

### Covalent Machinery Corporation

378, Oguni-machi Oaza Oguni-machi, Nishiokitama-gun  
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### Denko Corporation

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## Overseas Affiliated Companies

### Covalent Materials USA Inc.

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Tel: +1-408-467-0515 Fax: +1-408-467-0510

### •Texas Office

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### Covalent Materials Korea Ltd.

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### Covalent Materials Europe GmbH

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### Covalent Materials Taiwan Corp.

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### Covalent (Shanghai) Trading Co., Ltd.

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Tel: +86-21-6840-6988 Fax: +86-21-6840-6928

## Corporate Philosophy

We, the Covalent Group, through our focus on leading-edge materials and highly functional parts, bring together materials, technology and people to pursue and create unconditional value that will contribute to the prosperity of society.

## The Covalent Group's Principles

### 1. Prioritizing the Customer

We accord the highest priority to customers' satisfaction by providing value-rich products and services based on new perspectives and dynamic ideas.

### 2. Enhancing Corporate Value

Through constant change in management practices and technological innovation, we strive to garner the trust and meet the expectations of all who are stakeholders in the Covalent Group.

### 3. Contributing to Society

We place the highest consideration on human safety and environmental conservation, and as a good corporate citizen, we aim to achieve a symbiotic relationship with the global community and local communities in which we have a presence by contributing to their developments.

### 4. Conducting Fair Business

We are fully aware of our social responsibilities as a corporate entity, and we obey the rules and established norms of Japan and other countries as we conduct business fairly and with integrity.

### 5. Respecting the Individual

We respect each employee's individuality and creativity, and we foster a fair and generous environment in which he or she can grow and evolve as an individual.

## Corporate History

### Establishment of Toshiba Denko Co., Ltd.

- 1928 Established as Denki Kinyu K.K.
- 1938 Manufacturing of carbon products started
- 1939 Manufacturing of quartz products started
- 1944 Production of tecorundum started
- 1958 Name changed to Toshiba Denko Co., Ltd.
- 1961 Listed on First Section of Tokyo Stock Exchange; Hatano plant completed; production of transparent quartz started
- 1968 Merged with Toshiba Internal Insulation to form Toshiba Ceramics, Co., Ltd.

### Establishment of Toshiba Internal Insulation Co., Ltd.

- 1918 Kariya plant established by Toyo Taika Rengo K.K.
- 1956 Kawatana plant completed (now Covalent Materials Nagasaki)
- 1959 Name changed to Toshiba Internal Insulation Co., Ltd.
- 1962 Listed on Second Section of Tokyo Stock Exchange
- 1965 Ogakie and Kariya facilities consolidated (now Kariya Facility)
- 1968 Merged with Toshiba Denko Co., Ltd.

### Establishment of Toshiba Ceramics Co., Ltd.

- 1968 Toshiba Ceramics Co., Ltd. started
- 1971 Research facility completed (now Technology Development Center)
- 1973 Fine ceramics production started (ADS, TPA, etc.)
- 1977 Oguni semiconductor factory completed, silicon wafer manufacture started
- 1982 Joint venture with Tokuyama Soda K.K. formed to create Tokuyama Ceramics (now Covalent Materials Tokuyama); Toshiba Ceramics America, Inc. established (now Covalent Materials USA Inc.); Kyushu Ceramics established
- 1984 Tokai Ceramics established
- 1985 Sekikawa Denshi Co. established (now Covalent Materials Sekikawa)

- 1986 Kawatana Toshiba Ceramics established; new addition to Chuo research facility completed (now Technology Development Center)
- 1991 Toshiba Ceramics, Europe, Ltd. established (now Covalent Materials Europe GmbH); Niigata Ceramics established to be main base for large silicon wafer production (now Covalent Silicon)
- 1992 Sales of Hi Wafers begun
- 1998 New factory for photomask production completed at Kyushu Ceramics
- 1999 Kyushu Ceramics and Kawatana Toshiba Ceramics merge to form Nagasaki Toshiba Ceramics (now Covalent Materials Nagasaki); Toshiba Ceramics Taiwan Corp. established (now Covalent Materials Taiwan Corp.)
- 2002 Formed agreement with Ferro-Tech to produce small-diameter silicon wafers with a manufacturer in China; completed facility for producing large photomasks for LCD manufacture (now Covalent Materials Nagasaki)
- 2003 Began production of a biologically compatible ceramic bone filler; refractory production for continuous steel casting started at Kurosaki Harima in a joint venture
- 2004 Headquarters moved to present location at Ohsaki, Nissei Bldg. in Tokyo
- 2007 Toshiba Ceramics became a subsidiary of SIC Investment Co. in preparations for a management buyout and was delisted from the Tokyo Stock Exchange; merged with Covalent Materials

### Establishment of Covalent Materials Corporation

- 2006 SIC Investment, a special purpose corporation for the tender offer of Toshiba Ceramics' shares, was established; Toshiba Ceramics became a subsidiary of SIC Investment following the completion of the tender offer
- 2007 SIC registered its name as Covalent Materials Corporation after making Toshiba Ceramics a complete subsidiary; Toshiba Ceramics merged with Covalent Materials Corporation and the new Company was inaugurated
- 2008 Covalent (Shanghai) Trading Co., Ltd. established

# COVALENT

## **The Covalent Group** **— Creating New Values through Collective Strength —**

Covalent is used in the chemistry terms “covalent bond” and “covalent crystal,” and it refers to chemical bonds formed by the sharing of electrons between atoms.

We take raw materials starting with ceramics and silicon and integrate them with our technology to create new values. Using these, we are determined to grow with all the people who share a connection with us. This is the meaning behind our company name, Covalent Materials.

The vertical bars on either side of COVALENT represent the mathematical symbol for the absolute value, and signify our advanced technologies and strong will.

Through collective strength, we are committed to creating new values and better serving the users of our products and all other stakeholders.

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