Working On Wonders

“Electrical insulating materials are the basis of electric machinery manufacture.”
These words encompass the strong belief of Namhei Odaira, the founder of Hitachi, Ltd.,
behind the development of electrical insulating varnishes.
“A pioneering spirit to explore uncharted areas” is condensed in
one drop of this amber-colored liquid.
Since then, for a little more than one century,
Hitachi Chemical group has developed and supplied creative materials
in response to the various needs and challenges of society.
The history of Hitachi Chemical group is a journey of innovation
that brings “Wonders” to society through the power of chemistry.
And “Wonders” continue to move on to the next areas.
Binding all the strengths of our group, we will create new innovations in the
global market, which is undergoing radical change from day to day.
Binding “Strengths” for Next “Wonders”

In-depth know-how of organic and inorganic materials was gained in the manufacture of our original products since the initial phase of history of Hitachi Chemical group. Various technologies were developed in the quest for better products. Combining and harmonizing the expertise and the technologies, we have transformed materials into novel values and concepts. Based on our products born in these ways, we will respond to various challenges encountering global society by creating the next “Wonders.”

Material Technologies
- Molecular and Particle Design, Functional Resin Design
- Energy Storage, Device Design, Thermal Management, CAE, Surface Control
- Interface Control, Organic and Inorganic Synthesis, Precision Polymerization, Organic-inorganic Hybrid

Process Technologies
- Purification, Extraction, Compounding, Dispersion, Impregnation, Coating, Composite Formation, Lamination, Sintering, Molding, Cultivation

Evaluation Technologies

Functional Materials
- Electronics materials
- Inorganic materials
- Polymer science materials
- Printed wiring board materials

Advanced Components and Systems
- Automotive products
- Energy storage devices and systems
- Electronics components
- Diagnostics/instruments

Original Products
- Insulating varnish, Industrial laminate, Porcelain insulator, Carbon brush

Technology Platform
- Motive Power of “Wonders”
  - Three technologies generate the motive power that creates new “Wonders.” They are “material technologies” to create required functions, “process technologies” to manufacture products efficiently without wastefulness, and “evaluation technologies” to lead to next steps by precise analysis.

Main Product Groups
- Turning Versatile Technologies into “Wonders”
  - We produce a wide range of products from materials to devices. These products create “Wonders” in various fields such as electronics equipment and automobiles that are indispensable to our everyday life, as well as wind power generator and photovoltaic facilities that support our society.

Focused Business Fields
- Telecommunications
- Environment & Energy
- Automobiles
- Life Sciences

Next Wonders!

Original Products
- Beginning of “Wonders”
  - The four start-up products, “insulating varnish,” “industrial laminate,” “porcelain insulator,” and “carbon brush,” developed early 1950s, built the foundation of the wide-ranging technologies of Hitachi Chemical group of today. In-depth know-how and expertise in organic and inorganic chemistry gained through the manufacture of these products turned into seeds, creating numerous “Wonders.”

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Focused Business Fields
- Aspiring to build a society that is better to live in, we are promoting innovations to bring “Wonders” into fruition, centering on four business fields in which our strengths can be demonstrated. These four fields are “Telecommunications,” “Environment & Energy,” “Automobiles” and “Life sciences.”
Telecommunications

Through state-of-the-art technology development for materials for semiconductors, inorganic materials, polymer science materials, printed wiring board materials and electronics components, Hitachi Chemical group has contributed to provide solutions challenging various problems and issues such as fine wiring of semiconductors, circuit connection of a micrometer order and thermal management.

We will further accelerate the development of materials that will contribute to higher speed, larger capacity telecommunications through the Internet of Things (IoT) and through greater use of big data. A contribution will also be made for higher definition, higher functions and further miniaturization of 8K high-definition TV sets, wearable devices and others.

Focused Business Fields

Fast, Fine and Beautiful

Environment & Energy

Hitachi Chemical group has contributed to the creation of ideal energy management in all areas of “energy creation,” “energy saving,” and “energy storage.” This contribution has been achieved through research and development towards improving the environmental durability of wind turbine generator components and mitigating output fluctuations from renewables, as well as enhancing the output performance of lithium-ion batteries and extending the expected life of lead acid batteries. We will actively offer a wide range of solutions globally, from the development of new materials and devices to proposals for large-capacity power storage systems that support communities, in an effort to continuously further contribute to a low-carbon society.

Focused Business Fields

Creating, Saving and Storing

Main Products

CMP Slurries

These are polishing liquids to make coarse surfaces smooth when semiconductor circuits are formed. Utilizing both inorganic and organic material technologies, the mechanical action of polishing grains and the chemical action of liquid components are optimized. High-speed polishing is attained, minimizing wafer flaws.

Circuit Connecting Films for Displays

These are circuit connecting materials for displays. Both electrical conductivity and insulation property are achieved while these films connect batches of very small electrodes in micrometer order. Widely used in smart phones, liquid-crystal displays and other devices, these films make higher definition images and smaller, thinner devices.

Main Products

Carbon Anode Materials for Lithium-ion Batteries

Graphite materials are the keys to larger capacity and longer life of lithium-ion batteries. Our carbon syntheses technology and particle design technology gained in the development process of carbon brushes are used in the design of internal structures for efficient inward and outward movement of lithium ions.

Power Storage Systems

These power storage systems combine a bidirectional converter and lead acid batteries or Lithium batteries. These systems are used as a power peak cutting system to control maximum power consumption during systems by effectively using electricity during nighttime and in mitigating output fluctuations of renewable energy such as wind power generation.
Life Sciences
Taking full advantage of our expertise in the development technologies of not only test reagents but also reaction containers and test systems, Hitachi Chemical group is supplying analyzers and reagents for various tests in the field of dyslipidemia, diabetes, allergies, and other diseases. In addition, we are developing products that enable the capture and analysis of cancer cells in blood and the monitoring of the effect of medical therapies.
In the business of contract manufacturing process development and contract manufacturing of regenerative medicine products, we are providing services based on the rich manufacturing practices that have been accumulated for more than 20 years in the United States. We opened a large-scale sterile production facility in Japan in 2018. We shall promote the formulation of a global supply system together with two base points in the United States and contribute to the dissemination of regenerative medicine products.

Main Products and Services

Allergy Diagnostic Systems
These diagnostic systems examine substances that cause allergies such as pollen, foodstuff and house dust by measuring the amount of antibodies in blood. In addition to these unique allergen refining method and fixation method, a special reaction container has been designed to simultaneously examine 48 different substances that cause allergies.

Development of Manufacturing Methods and Contract Manufacturing of Regenerative Medicine Products
We perform development of manufacturing methods and the contract manufacturing of regenerative medicine products outsourced by pharmaceutical companies and research institutes. These services are performed at our sterile manufacturing facilities, which incorporate globally harmonized quality control systems. Regenerative medicine products that are manufactured by purification or other appropriate processing of human or animal cells to be used for the treatment and prevention of diseases.

Automobiles
The wide-ranging product lineup of Hitachi Chemical group has contributed to automobiles that are safe, comfortable and environment friendly. Our product lineup includes plastic molded products such as molded plastic rear door modules and high-strength plastic gears, disc brake pads, thermal and noise insulation materials, powder metal products, batteries and components for automotive electronic equipment. We will continue to support the development of state-of-the-art automobiles by supplying products with higher added values through a flexible combination of versatile material technologies such as resins, metals and carbon.

Main Products

Disc Brake Pads
We are developing our products for realizing ideal brakes that reduce braking noise while maintaining high braking performance, by optimizing material blending of metals and resins and through simulation analysis of friction phenomenon. Pads that do not contain copper are also supplied to reduce more environmental load.

Powder Metal Products
Compression molding and sintering of metal powders such as iron and copper realize complex shapes with high precision. As lubricating properties, resistance to heat, magnetic properties and various other functions can be added, they contribute to improving the performance and reduction of weight in automobiles, industrial equipment, and other applications.

Focused Business Fields

Accurately, Quickly and Gently

Safely, Comfortably and more Eco-friendly
Building on a History of Innovation to Meet New Challenges

Hitachi Chemical group has a proud history of innovation. Reacting to various challenges, we have undertaken creative product and technology development and have made proposals. We have produced many materials that have greatly influenced the evolution of society today.

- **1912** Started trial manufacture of electrical insulating varnishes.
- **1916** Started manufacturing and storing battery storage.
- **1930** Started trial manufacture of phenol resin laminates.
- **1931** Started trial manufacture of porcelain insulators.
- **1933** Started trial manufacture of carbon brushes.
- **1951** Started selling powder metal products.
- **1955** Started manufacturing copper-clad laminates for multilayer PCBs.
- **1962** The chemical division of Hitachi, Ltd. became an independent entity as Hitachi Chemical Co., Ltd.
- **1963** Started selling polyethylene butadiene rubber LLDPE sheets.
- **1964** Started manufacturing circuit connecting films for displays.
- **1969** Started manufacturing disc brake pads.
- **1974** Started high-volume production of automobile interior moldings.
- **1976** Established our first overseas resident office in Germany.
- **1978** Started developing stretched films for business use.
- **1980** Started developing high-volume production of carbon aron materials for lithium-ion batteries.
- **1984** Started manufacturing circuit connecting films for displays.
- **1987** Developed liquid crystal screens.
- **1990** Started manufacturing CMP slurries for SMT.
- **1992** Started developing low-resistance epoxy molding compounds.
- **1993** Started manufacturing moldable plastic rear door modules.
- **2001** Started manufacturing aimed at producing molded plastic rear door modules for the first time in Japan. Aside from reducing the weight of the body, molded plastic rear door modules made possible installation of door forms that could not be achieved by metal rear doors, dramatically enhancing design freedom.
- **2008** Started manufacturing silicon-based materials for simultaneous measurement of 33 items.
- **2010** Started operating lead acid batteries for wind power generation with mitigation system of output fluctuations.
- **2013** Changed Japanese company name.
- **2017** Entry into the business of contract manufacturing process development and contract manufacturing of regenerative medicine products.

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**History**
Research and Development Network
- A Seed for Innovation

In cooperation with Hitachi, Ltd., we, Hitachi Chemical group, are actively expanding our global research and development centers to realize the next “Wonders” for the solution of social issues.

We will further accelerate our development and commercialization speed by expanding our research networks with outside organizations, and by alliances with venture enterprises that have unique state-of-the-art technologies.

Research and Development

Solving Problems with You as a Partner

In collaboration with the manufacturers of equipment and other materials, Hitachi Chemical group makes proposals stepping into the know-how of material combinations and manufacturing processes, in addition to the supply of materials, to solve product development problems encountered by customers.

Under the concept of “Collaborative Creation,” we will actively undertake these to provide solutions.

Global Research and Development Network

We have established research and development centers in three regions: Japan, the United States and China, to grasp state-of-the-art technological trends and to speedily incorporate society and customer needs in its research and development hand in hand with local corporations and group companies.

Promotion of Open Innovation

In the commercialization phase, Hitachi Chemical group is promoting joint development, technical collaboration, and other alliance schemes with venture enterprises that have unique technologies, in addition to joint research with external research organizations. In 2017, we opened the “Innovation Center,” a facility for new innovations through collaborative creation.

We exhibit our technologies through experience-based exhibitions, there, and are accelerating the creation of “wonders,” to exceed the expectations of customers.

Case of Activity in Semiconductor Materials

Hitachi Chemical group supplies a wide range of semiconductor materials from wafer process-related materials such as photosensitive coating materials and CMP slurries to packaging process related materials such as die-bonding films and pastes and epoxy molding compounds.

Beginning 2014, we have inaugurated an open laboratory inside our Packaging Solution Center, a development center of semiconductor packaging. By bringing our materials and parts supplied by customers to the lab, and by packaging and evaluating them together with our customers and equipment and other materials manufacturers, it enables us to shorten the development period and to propose new assembly processes.

Product Development Operations Outside of Japan

We are opening sites which operate product development, provide technical support, and design outside of Japan to quickly provide solutions to our overseas customers.

Flow for Proposal

Material Design and Development
- Resin design, device design, etc.
- Setting of material usage conditions

Prototyping
- Recreation of customer manufacturing environment
- Test run of a series of manufacturing processes

Reliability Evaluation
- Verifying chemistry among materials
- Verifying fitness with equipment or system

Research and Development

Solutions
Global Network of Solution Operations under Concept of “Near Customer Site”
Hitachi Chemical group has opened its manufacturing, sales and research sites outside of Japan in order to provide best solutions to our customers.
In addition, we have established regional headquarters in China and the USA, to build an organizational structure to agilely respond to market needs.

Global Network

JAPAN
1. Hitachi Chemical Co., Ltd. [Tokyo]
2. Hitachi Chemical Electronics Co., Ltd. [Tokyo]
3. Japan Brake Industries Co., Ltd. [Osaka]
4. Hitachi Chemical Automotive Products Co., Ltd. [杀菌]
5. Namji Hitachi Chemical Co., Ltd. [杀菌]
6. Hitachi Chemical Electronic Materials (Kyushu) Co., Ltd. [杀菌]
7. Hitachi Chemical Sumiden Power Products, Ltd. [杀菌]
8. Hitachi AIC Inc. [杀菌]
9. Hitachi Chemical Techno Service Co., Ltd. [杀菌]
10. Hitachi Battery Sales & Service Co., Ltd. [杀菌]
11. Kyowa Medex Co., Ltd. [杀菌]

U.S.A.
12. Hitachi Chemical Co. America, Ltd. [杀菌]

China
13. Hitachi Chemical (China) Co., Ltd. [杀菌]

HONG KONG
14. Hitachi Chemical Electronic Materials (Hong Kong) Ltd. [杀菌]

MEXICO
15. Hitachi Chemical Mexico, S.A. de C.V. [杀菌]

NETHERLANDS
16. Hitachi Chemical Europe B.V. [杀菌]

GERMANY
17. CH Solutions GmbH [杀菌]

ITALY
18. FIAMM Energy Technology S.P.A. [杀菌]

INDIA
19. Hitachi Chemical Industry Asia (Thailand) Co., Ltd. [杀菌]

SALES AND MARKETING

GLOBAL NETWORK

Regional headquarters

Manufacturing

Selling and service

13 Global Network

*As of 22 March 2021

Global Network
Information

Hitachi Chemical Group Identity

Mission
Contribute to society through the development of superior technologies and products.

Values: Founding Spirit

“Pioneering Spirit”
To work creatively, using novel approaches to enter new areas. To always act as a pioneer within our areas of expertise and to have the passion to pursue higher goals beyond our capabilities.

“Sincerity”
To act with a sense of ownership and honesty at all times and never pass the buck. The spirit to meet society’s expectations and generate credibility for Hitachi.

“Harmony”
The willingness to respect the opinions of others and discuss matters in a manner that is thorough and frank, but fair and impartial, and once a conclusion has been reached, to cooperate and work together to achieve a common goal.

Vision
With a pioneering spirit to explore uncharted areas, we develop innovative solutions beyond the boundaries of chemistry, delivering “wonders” that exceed the expectations of customers and society.

Company Information

Corporate Name
Hitachi Chemical Company, Ltd.

Establishment
October 10, 1962

Commencement of Operations
April 1, 1963

Chairman of the Board
Kazuyuki Tanaka

President and Chief Executive Officer
Hitoshi Maruyama

Head office Address
GRANTOKYO SOUTH TOWER, 1-9-2, Marunouchi, Chiyoda-ku, Tokyo 100-6606, JAPAN
Tel: +81-3-5533-7000  Fax: +81-3-5533-7077

Current Status of External Evaluation of SRI

Our website contains updated information of interest on company activities and technologies of our group.

Website of Hitachi Chemical  http://www.hitachi-chem.co.jp/english

Annual Report
We issue an annual report containing a summary of our business performance, business activities, future business strategy, environmental conservation and social contribution activities for each fiscal year.
http://www.hitachi-chem.co.jp/english/sr/ar.html

Technical Report
We issue a report containing our technical and product information.
Our products are there to meet you as society steps forward.

Amazingly fine high-definition video content can be enjoyed on a display! Efficient utilization of natural energy is increased further! Safer, more environmentally friendly and comfortable driving experiences are realized! These advances in the world are supported by a wide range of Hitachi Chemical products. Creating innovations for use in our daily life and society. Our technologies and ideas will continue to be expanded and enriched!
Functional Materials

**Semiconductor Related Materials**

**Wafer Process Related Materials**

**CMP slurries**
Chemical Mechanical Polishing (CMP) slurries are polishing materials used to polish and smooth out the unevenness of the interlayer dielectric, and in metal lines formed in the process of characterization. In addition to ceri-type slurry that minimizes polishing damage for Si, we also offer a lineup of slurry for copper wiring formation.

**Photosensitive Insulation Coatings**
These are photosensitive material having type for forming insulating layers in semiconductor packages, and are positive-type films that can be developed using an alkali aqueous solution. These can be cured at temperatures as low as 200°C or even lower, and features good curing characteristics.

**Fabrication Process Related Materials**

**Die Bonding Films, Die Bonding Pastes**
These materials are used to bond IC chips to lead frames or package substrates. In addition to having strong adhesion, they help to mitigate the distortions that occur due to differences in the coefficient of thermal expansion of each part. As a result, they contribute to the high reliability of semiconductor packaging.

**Epoxy Molding Compounds**
These protect IC chips from heat, moisture, dust and physical impacts. Their excellent endurance in reflow processing contributes to high reliability. While responding to diversifying semiconductor packaging, we offer products that meet our customers’ requirements.

**High Heat Resistant Coating Materials**
These materials provide excellent adhesion to various elements and form an insulation film with high heat resistance, excellent flexibility and toughness. They are used for automotive semiconductors, etc. To improve adhesion between molding materials and substrates and reduce internal electric leakage, contributing to a higher reliability.

**Release Films for Semiconductor Molding**
These films are used for collective molding of semiconductor packaging. As the release layer closely sticks to chips and lead frames, generation of burns in molding process is prevented with little glue remaining after releasing. The antistatic type can reduce the damage to chips from static electricity.

**High Heat-resistant Liquid Polyimides**
These are liquid coating type insulating materials. Primarily for use as buffer coating layers, passivation and re-wiring insulating layers, a wide range of products to suit various purposes are available including environmentally friendly aqueous-developable photosensitive polyimide.

+ Kyootech Chemical Dupont Microystems Ltd.

**Inorganic Materials**

**Carbon Products**

**Carbon Anode Materials for Lithium-ion Batteries**
These are graphite materials used in anodes of batteries. The product lineup includes artificial graphite featuring high capacity and excellent charge and discharge characteristics with many internal pores and natural graphite featuring a long life through our unique technology to reform grain surfaces.

**Carbon Brushes**
In motors and generators, these brushes conduct electricity by sliding. We supply a wide variety of carbon brushes from large brushes for electrical generation and railway cars to small brushes for automobile electrical equipment and micromotors.

**Carbon Sliding Materials**
Our heat- and chemical-resistant carbon sliding parts are self-lubricating, and therefore no lubrication is required. They can be cut or ground as easily as metal and can be used in variety of industrial machinery, such as chemical pumps.

**Glass-like Carbons**
These high-density materials with their smooth, glass-like surface are substantially corrosion resistant. The extremely low rate of melting points and high solidity give these materials a broad range of applications, including parts used during semiconductor manufacturing processes, essential materials for high-temperature furnaces and electrochemical equipment parts.

**Vertically-Oriented Graphite**

**Thermal Conductive Sheets**
These sheets have very high thermal conductivity in vertical direction orientation. The sheets are used as heat dissipating materials for semiconductor packaging of servers, etc. As they are flexible and can absorb the shock on the attaching surface and follow the warpage of semiconductor packaging, they contribute to improving the reliability of electronic equipment.

**Ceramics**

**High-density Silicon Carbide Ceramics**
These are fine ceramics of pressureless sintered alpha carbide materials that are extremely hard and highly resistant to high temperature and sliding wear. They are used mainly in mechanical seals for automobiles and semiconductor manufacturing equipment components.

**Alumina Ceramics**
These ceramics are made by uniformly and precisely bonding very pure, minute crystals, and are used in parts for semiconductor manufacturing equipment and liquid crystal display manufacturing equipment.

**Polymer Science Materials**

**Chemical Raw Materials**

**Epoxy Resin Hardeners**
These hardeners are used as epoxy resin setting agents in automotive electronic components and electrical insulators for heavy electric machinery. Because of their excellent transparency they are also used for LED encapsulating resin in electric signboards located in stadium.

**Functional Acrylic Monomers**
Monomers that are used as raw materials for high-molecular materials and as reactive diluents. These monomers can enhance the performance of polymers by reacting with them. They are used in various applications including photosensitive dry film, materials for touch panels and displays, and a wide variety of adhesives.
Functional Resins

Alkyl Phenol Resins
These materials are mainly used in rubber products, tires and paint and come in thermally reactive and non-thermally reactive types. These resins are highly regarded for their superior chemical resistance and thermal stability and are employed in a diverse range of applications in both consumer and industrial markets.

Polyester Resins
These are saturated polyester resins containing adipic acid and phthalic acid as ingredients. By combining it with various types of isocyanates, polyester resinbase materials having various characteristics such as toughness, water resistance, can be obtained. They are used in synthetic leather, paints, adhesives and building materials.

Phenolic Resins for Castings
These materials are the binder for manufacture of casts. The thermostetting phenolic resin are employed in the manufacture of resin-coated sand for the shellmold method.

Molding Resins Molding Compounds
Taking advantages of the characteristics as a phenolic resin, these materials have superior heat resistance, mechanical strength and dimensional stability. These are used in electronic components, sliding parts of engines and various other applications.

Adhesives

Acrylic Resins and UV-curable Resins
These materials are mainly used as the base for paints applied to various objects from buildings, cars to digital consumer electronics. Because of their excellent transparency they are also used as coating materials and adhesives for touch panels.

Casting Materials

Adhesives, Adhesive Tapes
These products are used in various objects from cars to consumer goods, such as automotive interior decoration parts, display panels, air purifier filters and soft drink shoes. They contribute to diversifying designs, upgrading production efficiency and automating the manufacturing processes.

Electrical Insulating Materials

Electrical Insulating Varnishes
These are electrical insulating varnishes used for impregnating coils in various motors and transformers, and for enamelled copper wire. We provide a wide range of products that boast characteristics required for electric appliances, such as high heat resistance, durability and adhesiveness.

Adhesive Films for Surface Protection of Optical Sheets
These films protect the sensitive surface of various optical sheets for displays when they are processed and transported. These films can be painted on various materials and surface profiles of sheets, and also do not damage them because of leaving only a very small amount of adhesive deposit.

Foamed Polyethylene
These foamed products, made by high foaming of polyethylene, are used in a wide range of fields, as packing materials and heat resistant materials for industry, architecture and vehicles. They have excellent insulating and shock-absorbent properties, and absorb little water and moisture. Secondary fabrication is also easy.

Coating Materials

RFID Products: Contactless IC Tags and Cards
These products, composed of IC chip and antenna, are devices that transmit and receive digital data using radio wave. We supply various tags and cards such as ultrasmall tags and metal tags that can be molded. They are used in management of food freshness and important documents, as well as maintenance management of infrastructure.

Wrapping Films for Food
These films are mainly used in professional settings such as restaurants and hotels. They can be cut easily and have excellent stretchability and adhesiveness so that containers can be wrapped tightly. We supply various sizes from 15 to 80 cm in width to meet user requirements. We are also supplying wrapping film for home use.

Display Related Materials

Circuit Connecting Films for Displays
These circuit connecting films satisfy both electrical conductivity and insulation performance and enable the connection of numerous micrometer scale electrodes at a time. They are used widely in smart phones and tablet PCs, contribute to displays of higher definition images and the creation of smaller, thinner devices.

Transparent Conductive Transfer Films
These transparent conductive films from electrode pattern on various substrates for touch panels. These films satisfy both conductive transparency, and enable customer’s upgrading production efficiency because of shortening manufacture process.

Quantum Dot Film
This is an optical film that uses quantum dots of semiconductor particles for conversion of light wavelengths. Images can be displayed at a higher energy efficiency and more colorfully than by conventional technology by using these optical films in the backlight modules of liquid crystal displays.

Moisture Resistant Insulating Materials for Displays
Excellent moisture-resistance enables these products to protect electrodes in such devices as LCDs from moisture. Since the coating has low moisture-permeability and low ionic impurities, it demonstrates excellent migration resistance and contributes to the reliability of the applications.

Thermosetting Polyimide Solder Resists for COF*
These products form resist layers over the flexible circuits and contribute to improve electrical insulation and mechanical durability. They cure at low temperatures, and the cured coatings ahve high elongation, therefore they demonstrate excellent adhesion to the sealants and have bending resistance.

Printed Wiring Board Materials

Base Materials

Glass Epoxy Multilayer Materials
These materials are made by impregnating glass cloth with epoxy resin and then laminating copper foil on both sides. They have high heat resistance, high elasticity and low coefficient of expansion, and are used in printed wiring boards and semiconductor package substrates.

Glass Epoxy Multilayer Materials for ICT Infrastructure
These are multilayer materials featuring electric characteristics required for high-speed electric signals and high heat resistance. These are used in network-related equipment such as routers and servers.

Functional Materials
Advanced Components and Systems

Process Materials

Photosensitive Dry Films for Printed Wiring Boards
These are film-type resists which are applied onto the copper-clad laminates to create circuits for the printed wiring boards. These features high sensitivity, high resolution, and high adhesion with strong tensile ability to create high density patterns.

Photosensitive Solder Resist Films
These are moisture resistant insulating films for semiconductor package substrates. They are halogen-free and contribute to high packaging reliability because of their high endurance to a heat cycle and reflow processing. The low levels of warpage achieve thinner substrates for packages.

Photosensitive Liquid Solder Resists
These are liquid moisture resistant insulating materials for semiconductor package substrates. They are halogen-free and contribute to high packaging reliability because of their high endurance to a heat cycle and reflow processing. The low levels of warpage achieve thinner substrates for packages.

Other Materials

LED Materials
White Epoxy Molding Compounds for Reflectors
These materials are used for the reflector part of the LED package. Using a thermosetting resin, these materials feature less lowering of reflectance even at a high temperature, long life and high reliability.

Evaporation Coated Products
Evaporation Films
These film products are deposited with aluminum. Excelling in strength, reflectivity and heat insulation, these films are used in wrapping touch-ups, agricultural applications to increase cultivation efficiency, emergency blankets and other applications.

Thermal Management Materials
High Thermally Conductive Insulation Adhesive Sheets
These insulating materials have high thermal conductivity in all directions with a high degree of adhesion, and are used as heat dissipators. These can enhance the heat dissipation properties of the electronic parts used for power inverters in hybrid automobiles, electrical home appliances, LED lights, computer peripheral equipment and so on.

System for Processing Carbonic Acid Gas for Strawberry Seedlings
In this system, strawberry seedlings before planting are sealed using an evaporated film deposited with aluminum and carbonic acid gas is filled in sealed bags. To eradicate various insects such as spider mites. An agricultural chemical is not used and sprayer mites including eggs on the backsides of the leaves can be eliminated thoroughly without providing a drug tolerance to mites.

Mold Materials
Precision Mold Materials (Resin Coated Sand)
These materials are used for making molds by the shell molding method. High functionality and reliability have been achieved by coating each grain of silica sand with a phenolic resin. Various types of sand are available tailored to customer requirements.

Advanced Components and Systems

Automotive Products

Plastic Molded Products

Interior and Exterior Plastic Molded Products
We supply diverse interior and exterior molded products from small to large sizes such as instrumentation panels, bumpers and front lids. For exterior molded products, our unique foaming technology realizes a light weight and excellent appearance without reducing the rigidity.

Molded Plastic Rear Door Modules
Automotive rear door modules that were made of metal are now manufactured by molding them using a plastic resin and combining various rear door components in them. We have developed a composite material featuring high strength, rigidity and resistance to shock, enhancing the automobile design freedom and reducing the automobile weight.

Composite Moldings for Electric and Electronics Components
These are molded electric components produced through integrated molding of a high-durability resin and parts that contain metals. Aluminum parts are now used to reduce the weight of these components and they are used in IPM housings of electric vehicles, hybrid vehicles and in other applications.

High-strength Plastic Gears
These gears use reinforced fiber as a base material and are made by molding a resin that excels in strength and heat resistance. Used in secondary balancing shaft gears of automobile and ship engines that require extremely high durability and reliability, these gears reduce the overall engine weight and keep noise and vibration to a minimum while automobiles and ships are in cruise mode.

Fricion Materials
Disc Brake Pads
These disc brake pads are used in automobiles and motorcycles. Each product has specific features such as superior braking, noise resistance, and wear resistance that contribute to the improvement of brake performance, reduction of stopping distance, and extension of service life.

Thermal and Noise Insulation Materials
Direct Insulation Products
These are thermal insulation parts for automobile exhaust systems, etc. By the combination with materials with excellent heat-insulating properties, sound absorption, heat resistance and durability, they contribute to the improvement of fuel efficiency and reduce noise. We can respond to your wide range of needs from the selection of materials to the designing of shapes. ~ SOUTH GEAR

Powder Metal Products

Structure Parts
These products are manufactured by compression molding and sintering of metal powders. The high-precision compression molding process, sintering joint technology and other appropriate technology realize both excellent mechanical properties and complex shapes. They are widely used in engines, transmissions and other automobile power trains, industrial equipment and other applications.

Functional Parts
These are powder metal products which have functions or properties such as lubricating properties, resistance to heat, resistance to oxidation, magnetic properties and various others. They are mainly used for rotating or sliding parts such as bearings, guides, fuel, injector cores for automobiles, joints for industrial equipment, and other applications.
Advanced Components and Systems

Other Automotive Products

Suspended Particle Device Films
These films adjust the transmittance of lights by changing the film color from blue to colorless seamlessly by voltage adjustment. These are widely used in a variety of spaces such as in automobiles, aircrafts, and buildings.

Single and Multi Layer Sheets for Formed Products
These are single-layered or multilayered plastic sheets, which can be shape formed. We supply a wide range of products including automobile exterior sheets suitable for spraying and featuring a resistance to shocks and sheets of a high-brightness polishing type, which provide a sense of high grades.

Energy Storage Devices and Systems

Batteries

Automotive Batteries
These are batteries for automobiles featuring a high durability. A versatile lineup of automotive batteries can also be used in vehicles installed with an idle reduction system, vehicles installed with a charging control system, light automobiles, and business vehicles such as buses and trucks, to support the evolution of the car society.

Lead Acid Batteries for Industrial Use
These are industrial storage batteries of a control valve type, featuring long life, high reliability and low maintenance requirements, such as no refilling of water. In addition to backup applications, these are also used in alleviating output fluctuations of renewable energy power generation that is easily affected by weather such as wind power generation.

Capacitors

Aluminum Electrolytic Capacitors, Plastic Film Capacitors
These capacitors are widely used in industrial equipment for voltage smoothing of power supplies, circuits and electronic circuits, and can be surface mounted. These are used as a large output and plastic film capacitors that are resistant to humidity and flames and that can be surface mounted.

Power Storage Systems

These are power storage systems that combine bidirectional converters and lead acid batteries or lithium-ion batteries. As a power peak cutting system to control the peak in power consumption during daytime effectively using the electric energy available during nighttime, these support energy management of factories and offices.

Lithium Batteries for Industrial Use
The batteries are lightweight and compact, allowing charging and discharge of a large current. Thanks to their large capacity, these batteries can be found in backup power supply systems, large stationary systems for storage of electric energy and power supplies for large motor-driven machines such as construction machinery.

Traction Batteries
These are for motor-driven forklifts featuring durability against frequent charging and discharge, and discharge performance at low temperature. The batteries exhibit high performance even under severe conditions such as continuous long-hour operation and subzero temperature operation.

Power Supply Systems

Always stably supplying electric power, the power supply systems instantaneously deal with sudden power failures. We are ready to supply a wide range of systems ranging from large-scale systems that support factories and data centers to small systems for PCs and manufacturing equipment.

Products and Services Related to Life Science

Diagnostics / Instruments

Reagents for Automated Clinical Chemical Analyzers
These reagents are widely used to measure a variety of markers such as HDL cholesterol, LDL cholesterol, and triglycerides for the diagnosis of dyslipidemia, and blood sugar and Hemoglobin A1c for the diagnosis of diabetes.

Allergy Diagnostic Systems
This system is for measuring allergen-specific IgE antibodies in serum to detect substances causing allergies. It measures 48 types of IgE antibodies including pollen and foods simultaneously and provides abundant data through a single test.

Research Use Only Analysis Reagents

Research Use Only mRNA Analysis Kit - Blood/Urine
The Research Use Only kit for isolation of extracellular microRNA biological samples such as plasma and urine. Exosomes and microvesicles (EVs) can be captured, mRNA can be isolated and cDNA can be synthesized through a single platform without ultracentrifuge. The kits are used as a tool for biomarker discovery in both academic and pharmaceutical companies.

Service for Regenerative Medicine

Development of Manufacturing Methods and Contract Manufacturing of Regenerative Medicine Products
We perform development of manufacturing methods and the contract manufacturing of regenerative medicine products outsourced by pharmaceutical companies and research institutes. These services are performed at our dedicated manufacturing facilities, which incorporate globally (remoted quality control systems. Regenerative medicine products: Products that are manufactured by cultivation or other appropriate processing of human or animal (cells) to be used for the treatment and prevention of disease.

Electronics Components

Printed Wiring Boards

Multi Wiring Boards
These wiring boards have circuits formed by burring polyamide-coated copper wires into the insulation layer with a wiring machine, and are used mainly in IC testers. The boards achieve high density and excellently electrical characteristics while realizing simplified designs, resulting in shorter lead times.

High Layer Printed Wiring Boards
These printed wiring boards are compatible with dense, multilayer devices. These boards are used in high-end telecommunication equipment for cloud computing, including servers, routers and storage devices.

Advanced Components and Systems