MITSUBISHI GAS CHEMICAL

GROUP GUIDE

Creating value to share with society and realizing sustained growth

Technology and society continue to change at a tremendous pace, while unexpected events and innovative technological advancements are occurring around the world. In this environment, the Mitsubishi Gas Chemical (MGC) Group's mission is to contribute to social development and harmony based on its original technologies. We face a myriad of challenges: from climate change, resource and energy problems, and a declining birthrate and aging population to medical and food safety, IT technology advancement, and the accelerating diversification and change in customer needs. To meet these challenges, we have constantly strived to create new technologies and value, growing together with society in the process.

Going forward, the MGC Group will contribute to resolving social issues in several ways, including creating and providing chemicals and materials such as circular carbon methanol (Carbopath™), hydrogen peroxide, high-performance engineering plastics, meta-xylenediamine (MXDA), and MX-Nylon, as well as materials needed for developing and building the society of the future, such as electronics chemicals, optical materials, and IC plastic packaging materials. In addition, we will develop a wide range of businesses to meet needs in the areas of medicine and food, including medical packaging materials (OXYCAPT™) and oxygen absorbers (AGELESS™). We will also provide the value required for building the society of the future in terms of carbon neutrality and other aspects, through our energy resources business, including geothermal power generation and CCUS (Carbon dioxide Capture, Utilization and Storage), and life science solutions products related to biotechnologies, such as antibody drugs.

In order to realize sustained growth even amid increasingly immense changes in society caused by the high-level development of new technologies such as AI and DX, it is important that we do not allow ourselves to be bound by conventional parameters, but create, foster, and evolve new businesses. In this way, we will aim to resolve social issues that emerge in the future and supply new value through new business domains while growing organically. Naturally, a major precondition to achieving this is the ability of our colleagues, those within the Company and at Group companies, to work with a positive mindset and fully leverage their individual talents. We believe that developing and incorporating the capabilities of each individual will result in significant growth for the Company.

Under its Mission of "creating value to share with society," the MGC Group will create social value along with economic value and realize sustainable growth. I look forward to your continuing guidance and support in this endeavor.

Yoshinori Isahaya
President and Representative Director

MGC Commons

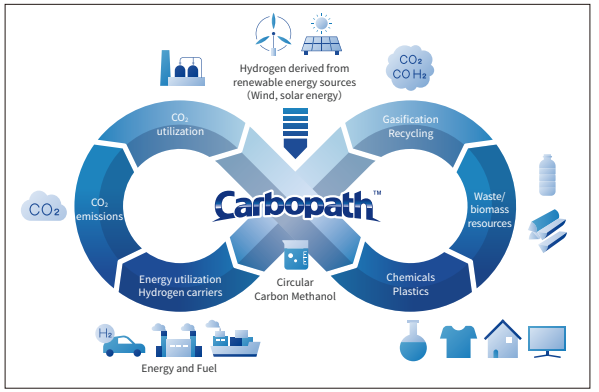
MGC Commons is an innovation center operated by MGC. This facility aims to create value to share with society through encounters, learning, and growth for a diverse range of people.

C1 Chemicals Division

Broader reach, enhanced strengths.
Aiming to be a global leader in the methanol chain.

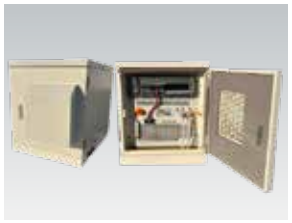
The MGC Group manufactures methanol in Saudi Arabia, Venezuela, Brunei, Torinidad and Tobago. [Photo: Brunei Methanol Company (Brunei)]

Starting from the raw material of natural gas, we deploy the methanol chain and ammonia chain across a wide field ranging from basic chemicals to functional materials. Right now, we are promoting our Carbopath™ initiative, a circular carbon platform that aims to create energy and materials through green methanol produced from CO_2 and waste products.



Methanol is a basic chemical feedstock that supports the chemical industry. In recent years it is also attracting attention as a non-petroleum fuel.

MGC manufactures methyl methacrylate (MMA), used in plastics and paints, through its proprietary new ACH method (a green process which produces no ammonium sulfate byproduct).
[Photo: MMA Plant at the MGC Niigata Plant]



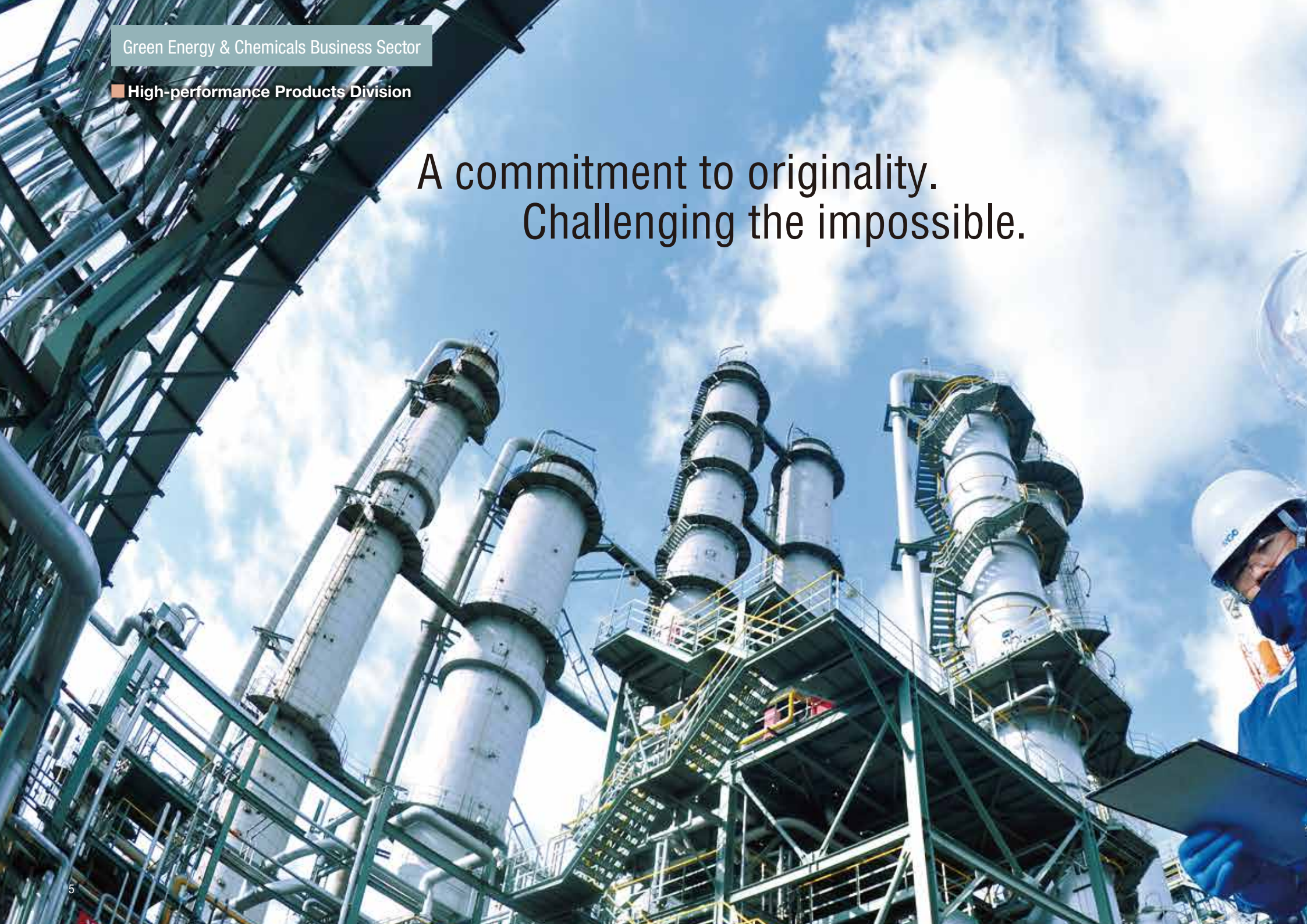
Direct Methanol Fuel Cell (DMFC) generates electricity from methanol and air. Because electricity is generated by a chemical reaction, the fuel cell is quiet and does not create atmospheric pollutants. It can run communications devices for extended periods (72 hours or more) when used as a backup power supply.

Ammonia is used as a reducing agent for denitration to eliminate nitrogen oxide and help prevent air pollution. (Photo: An ammonia transport ship)

Major products

- Methanol
- Dimethyl ether (DME)
- Ammonia
- Amine
- Methyl methacrylate(MMA), Methacrylic acid (MAA), Methacrylate specialty esters

A commitment to originality.
Challenging the impossible.



The superacid HF-BF_3 is used for industrial purposes at the MGC Mizushima Plant under strict safety controls. [Photo: MGC Mizushima Plant]

Centered on technologies using the superacid HF-BF3, we are developing highly original products as only the MGC Group can, including meta-xylene chain and aromatic aldehydes. These products are all essential to our lives and industry, including raw materials and additives for textiles, synthetic resins, and coatings.

Major products

- Meta-xylene
- MX Nylon (MXD6)
- Purified isophthalic acid (PIA)
- Formalin
- Meta-xylenediamine (MXDA)
- Aromatic aldehydes
- Molded products
- Polyols

High-performance products

- Neopulim™ (Transparent polyimide varnish)
- MAXIVE™ (Gas barrier epoxy-based resin)
- Therplim™ (Thermoplastic polyimide)
- NeoFARIT™ (Raw materials for Semiconductor materials)
- ALTESTER™ (heat-resistant amorphous polyester resin)
- CYTESTER™ (cyanate ester monomer)

The world's first successful mass production of Neopulim™ transparent polyimide film. The film is completely free of fluorine components, which are causing concern regarding impacts on ecosystems and the human body

MXDA is also used in anti-corrosion coatings to protect boat hulls.

Aromatic aldehydes are also used in the creation of safe, transparent polypropylene resin.

Lighter weight and enhanced safety are required for automotive parts. Rear seat core materials made from expanded polypropylene contribute to both and are common throughout the world.

Adoption of Neopulim™ is advancing in information and communications field such as smartphone parts, taking advantage of the material's colorless transparency and heat resistance exceeding 300°C.

Life Science and Energy Resources & Environmental Business

Providing energy to people and society. Deriving power from gas.

In the life sciences field

We have been developing and manufacturing health food ingredients based on biotechnology by leveraging the technologies we developed over many years.

Major products

- Health food ingredients
  Pyrroloquinoline quinone (PQQ)
  Dry yeast containing S-Adenosyl Methionine (SAMe)
  Dry yeast containing Spermidine (SPD)

Pyrroloquinoline quinone (PQQ), which is manufactured using biotechnology, is a food ingredient expected to have brain function enhancement effects.

We supply functional yeasts containing high content of S-adenosylmethionine (SAMe) or spermidine (SPD).
[Photo: Yeast containing SAMe]

Mobilizing our expertise in animal cell culture technology and manufacturing process development, we handle all processes from initial-stage development of drug substances for antibody pharmaceuticals to their manufacture, contributing to high-quality, reliable treatments.

In energy source development

We are involved in oil and gas exploration thermal power generation using natural gas and geothermal power generation and promote the clean energy business.

Major business

- Natural gas and crude oil extraction and prospecting
- Development of geothermal energy
- Sales of electric power

Geothermal power generation contributes to the stable supply of electricity, as it is not affected by seasonal and weather changes. It is clean energy that has low CO_2 emissions and is effective in preventing global warming.
[Photo: Wasabizawa Geothermal Power Plant in Akita Prefecture]

Natural gas produced from our company's license area in Niigata is used as a feedstock and fuel at the MGC Niigata Plant.
[Photo: Iwafune-oki Oil-Gas Field in Niigata Prefecture]

Inorganic Chemicals Business

Imagination and creativity supporting the evolution of electronics.

The focus of our business is on hydrogen peroxide, which is used as a non-chlorine bleach and an industrial oxidant, and high-purity electronics cleaning agents, which are used mainly in the semiconductor field. In preparation for future growth of the semiconductor industry, we are expanding our supply capacity for super-pure hydrogen peroxide, used for cleaning in the semiconductor manufacturing process, in Japan, Korea, the United States, Singapore, Taiwan, and China.

Major products

- Hydrogen peroxide
- Persulfates
- Electronic chemicals (Chemicals for use in the electronics industry)

Hydrogen peroxide is commonly used as a non-chlorine bleach in the production of pulp and paper, and also in applications such as household bleach, industrial oxidant, and metal surface treatment.

The uses of persulfates include etchants for printed circuit boards and polymerization initiators for plastics.

Super-pure hydrogen peroxide and other electronic chemicals from the MGC Group are essential chemicals in the production of semiconductor devices, liquid crystal displays, and printed circuit boards.

Engineering Plastics Business

Beyond metal, beyond glass.
A materials revolution that transcends plastics.

Our Iupilon™ polycarbonate combines high transparency with over 250 times the impact resistance of glass, plus excellent heat resistance and dimensional stability.
Other engineering plastics we offer include the polyacetal Iupital™ and the molding compound Reny™, based on polyamide MXD6.

The MGC Group is expanding its overseas production bases for engineering plastics.
[Photo: Thai Polyacetal Co., Ltd. (Thailand)]

Iupilon™ film and Iupilon™ sheet are used in LCD TVs and automobile navigation systems.

Iupital™ is also used for important components in automobiles.
[Photo: Fuel pump unit manufactured with Iupital™]

Major products

- Iupilon™ (Polycarbonate), Polycarbonate Sheet, Polycarbonate Film
- Iupital™ (Polyacetal)
- Reny™ (Polyamide MXD6 molding compound)
- Iupiace™ (Modified polyphenylene ester resin)

The MGC Group actively develops polycarbonate sheets and films.
[Photo: MGC Tokyo Research Laboratory]

Optical Materials Business

Technology commanding seven sparkling shades, navigating the waters of today's cutting-edge information world

We offer a wide range of optical material products including Iupizeta®EP, an optical polymer used in the camera lenses of smartphones and other products, and a plastic lens material with the world's highest refractive index.

Major products

- Optical resin polymer (Iupizeta™ EP,Optimas™)
- Lens Monomer for high index ophthalmic lens (IURESIN™, Episleaf™)
- Solvent-soluble special polycarbonate polymer (Iupizeta™)

Iupizeta®EP is used in high-performance compact camera lenses in smartphones. (Image: Optical lens made with Iupizeta™ EP)

Lens Monomer "IURESINTM/Episleaf™" is world highest refractive index and offering the ultimate optical properties in plastic ophthalmic lenses.

Optimas™ greatly improves the characteristics that were previously the weak points of acrylic resins-heat resistance and water absorption. It is used in automotive components and various types of lenses (AR, VR, etc.).

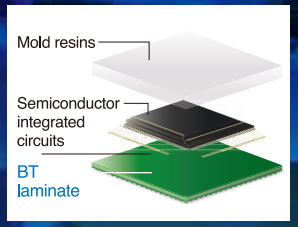
Electronics Materials Business

Supporting the future of semiconductors through a solid track recording performance and reliability.

We provide products essential to the electronics industry, with a focus on printed wiring board laminate material used on IC plastic package substrates. These include LE SHEET™, used as an auxiliary material in the small-diameter drilling of printed wiring boards, and oligo-phenylene ether (OPE) resin with low dielectric properties, which is used as a raw material for high-speed transmission printed circuit boards for data centers.

Major products

- Laminate materials for printed wiring boards
- LE SHEET ™ (auxiliary material for drilling)
- Oligo-phenylene ether (OPE) resin



BT laminate material boasts the top share among IC plastic package substrates.

High-performance IC plastic packages made with BT laminate materials support cutting-edge mobile devices such as smartphones andtablet computers.

Due to its low dielectric properties, MGC's OPE resin supports high-speed transmission performance in multi-layered printed circuit boards used in data centers.

LE SHEET ™ is an auxiliary material for drilling that supports increasingly minute circuit patterns.

[Photo: Yonezawa Dia Electronics Co., Inc.]

LivingTech and Hygiene Solutions Business

We support safe food and medicine by providing atmospheric control technologies that preserve flavor and cleanliness.

Our oxygen absorber AGELESS™ was born from the idea of keeping food flavorful by removing oxygen, the cause of deterioration. In addition to oxygen-absorbing technologies, we are currently expanding into atmospheric control technologies with the addition of sterilization using hydrogen peroxide and peracetic acid.

Major products

- AGELESS™
- AGELESS OMAC™ (oxygen absorbing film)
- PharmaKeep™ (for pharmaceuticals and medical equipment)
- Water treatment agents
- Environmental agents
- AGELESS DRY™(desiccant)
- Anaero Pack™ (anaerobic cultivation system)
- RP System™ (for mechanical parts, electronic components, raw materials and archaeological / cultural assets)
- DIAPOWER™ FP (peracetic acid for food additives)

AGELESS™ supports safety and reliability in foods, from everyday ingredients to snacks, gourmet foods, and emergency foods.

AGELESS™ and PharmaKeep™ are also used for quality control in pharmaceuticals and medical equipment.

Our RP System™, which can maintain oxygen and moisture free condition is also used in the quality assurance for mechanical parts, electronic components, raw material and furthermore the protection for archaeological / cultural assets.

DIAPOWER™ FP is a peracetic composition that satisfies food additive standards. It is highly effective in disinfecting bacterial that cause food poisoning in meat, fruits, and vegetables and is characterized by retention of its disinfection properties.

AGELESS™ is used in Japan and around the world.

Beyond “today” - We are trying to unlock the new business field with inovative technology and products.

As well as making maximum use of the synergy among our businesses and products, the MGC Group considers tie-ups and M&A with other companies and actively engages in the creation of new businesses.

Main development topics and products

Development Fields
- Medical
- Food
- Mobility

●OXYCAPT™ medical packaging

OXYCAPT™ is a new plastic container that boasts outstanding oxygen barrier and oxygen absorption performance.
The properties of plastics including break resistance as well as low protein absorption and low levels of substances eluted from the container are utilized in vial products.

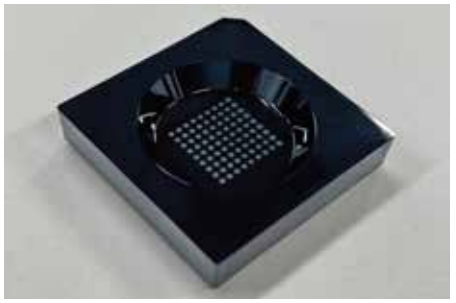
●Solid electrolytes

All-solid-state batteries are next-generation batteries that can provide high output and high capacity while maintaining high levels of safety. It is expected that they will be used in applications such as electric vehicles and electronic products.

●Factory-grown vegetables

The MGC Group entered the factory-grown vegetable business in earnest by establishing MGC Farmix Co., Ltd. jointly with a vegetable distribution venture and commencing the production, distribution, and sale of lettuce and other leaf vegetables grown in the largest fully artificially light type vegetable factory in eastern Japan. MGC Farmix, which acquired the international Global G.A.P. (Good Agricultural Practices) certification in 2020, engages in the stable supply of safe and reliable vegetables.

●Allergy diagnostic chips



The MGC Group has developed chips to measure antibodies in the blood that combine with allergic substances to trigger allergic reactions. These chips are expected to contribute toward improving the quality of life. By separating allergic substances into multiple fragments and simultaneously measuring them, the test can examine which parts of the allergic substances the antibodies combine with, thereby providing more accurate information compared with conventional methods.

Research & Development

Advancing R&D to “Creating value to share with society”

The MGC Group has a long track record of developing unique, proprietary technologies and products with value that meets the needs of society. Regarding existing products, we endeavor to strengthen our earnings power and lighten the environmental load through relentless efforts to make technical modifications.
Regarding the creation of new products and new businesses, we are constantly thinking about such issues as what the needs of society are, whether there are places where the MGC Group’s technology can be utilized, and whether that technology is environment friendly. By continuing to give birth to new products and new businesses, we will create new value.

Research and Development Strategy

MGC considers research and development plays a pivotal role to being a distinctive and excellent chemical company. MGC Group’s research and development strategy is to leverage our core technologies, strengthen the chemical chain through creation of new processes, and realize new growth, in Mobility, Medical / Food, Information / Communications, Energy, Infrastructure.

Tokyo Research Laboratory

Niigata Research Laboratory

Hiratsuka Research Laboratory

Technology platform and main products

Process engineering / analysis (common)

Catalyst Super acid / Solid catalyst / High pressure	Xylene separation / Methanol / Methyl methacrylate / Ammonia / Dimethyl ether / Aromatic aldehydes
Synthesis Air oxidization / Liquid-phase oxidization / Hydrogenation	Hydrogen peroxide / Neopentylglycol / Meta-xylenediamine
Polymer Polymerization / Films and sheets / Polymer Processing	Polycarbonate (Iupilon™) / Polyacetal (Iupital™) / MX Nylon / Optical resin polymer / Lens Monomer for high index ophthalmic lens / Modified PPE (Iupiace™) / Polymer Processing
Functional products Oxygen absorber-related / Varnish-related / EL chemical-related	Oxygen Absorber (AGELESS™) / Printed circuit board materials / Environmental agents / Electronics chemical agents / BT resin / Chemical polishing agents
Life science Continuous cultivation / Breeding / Antibody drug technology	Functional food material (PQQ, Yeast products)

R&D strategy

R&D goals and targets

Creation of business for grow fields

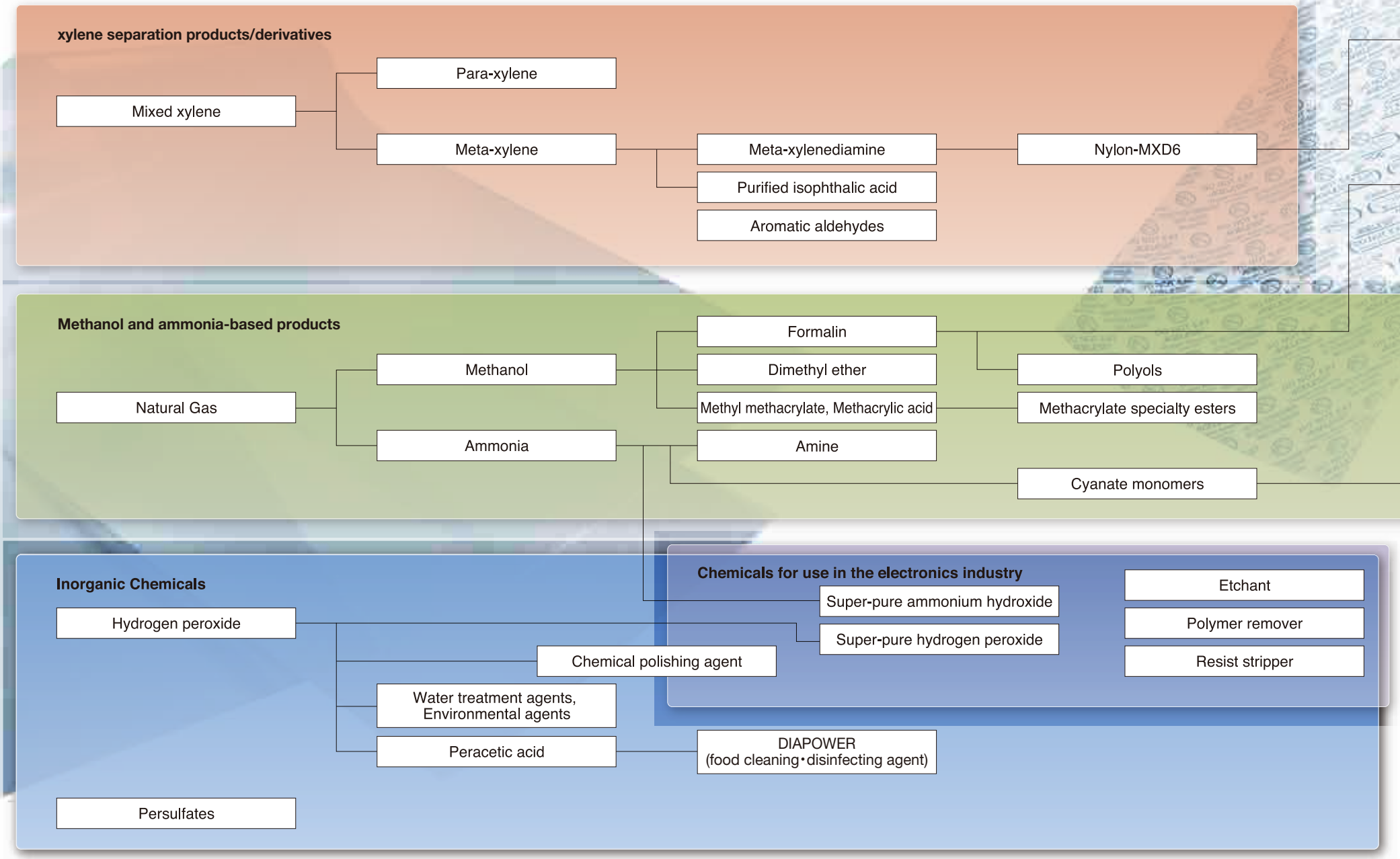
Mobility, Medical / Food, Information / Communications, Energy, Infrastructure

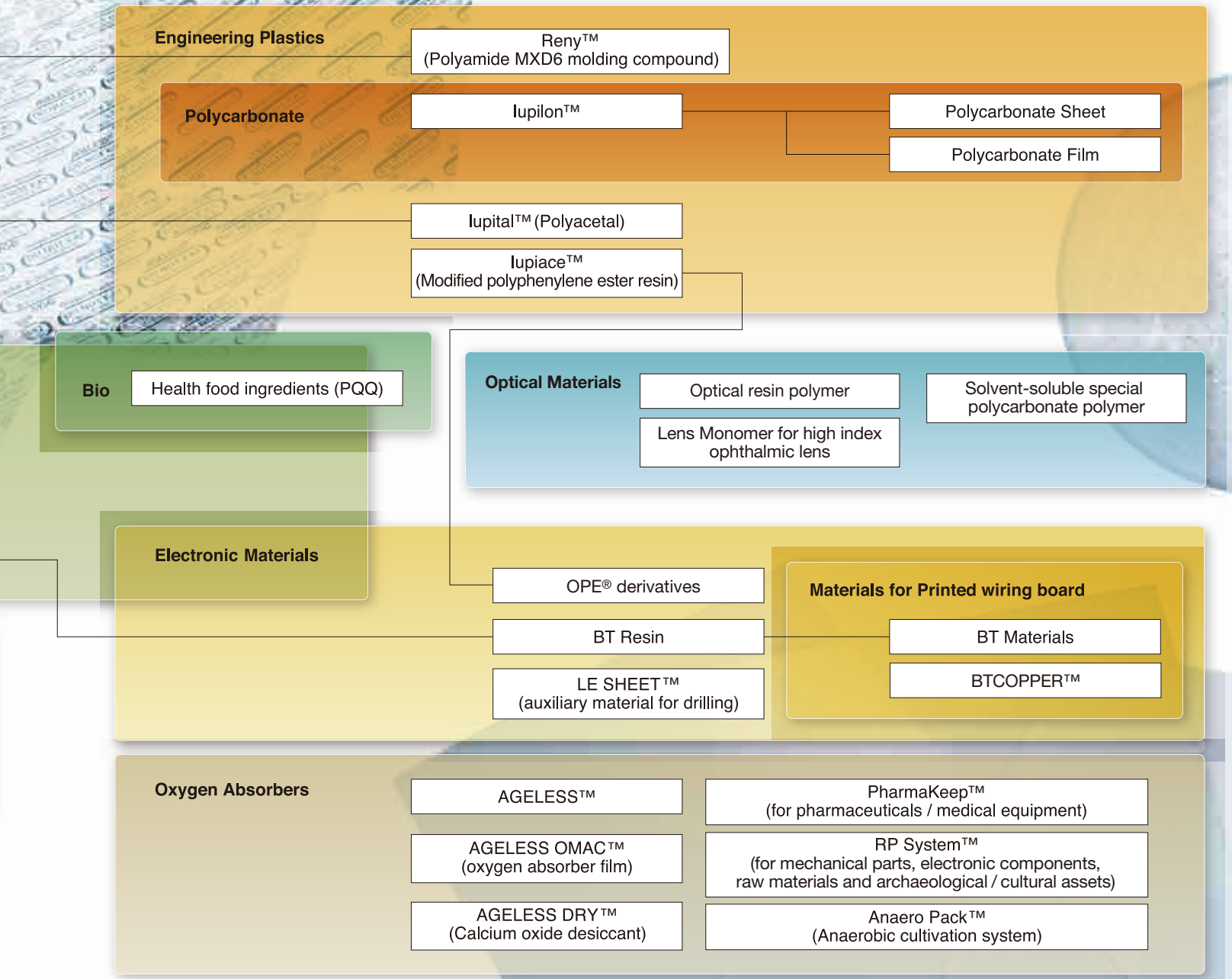
Strengthen the chemical chain

Creation and introduction of new processes

Product Flow

Chemical chain to high performance.




Engineering Plastics
Reny™
(Polyamide MXD6 molding compound)
Polycarbonate
Iupilon™
Polycarbonate Sheet
Polycarbonate Film
Iupital™ (Polyacetal)
Iupiace™
(Modified polyphenylene ester resin)
Bio
Health food ingredients (PQQ)
Optical Materials
Optical resin polymer
Solvent-soluble special polycarbonate polymer
Lens Monomer for high index ophthalmic lens
Electronic Materials
OPE® derivatives
BT Resin
LE SHEET™
(auxiliary material for drilling)
Materials for Printed wiring board
BT Materials
BTCOPPER™
Oxygen Absorbers
AGELESS™
PharmaKeep™
(for pharmaceuticals / medical equipment)
AGELESS OMAC™
(oxygen absorber film)
RP System™
(for mechanical parts, electronic components, raw materials and archaeological / cultural assets)
AGELESS DRY™
(Calcium oxide desiccant)
Anaero Pack™
(Anaerobic cultivation system)

Corporate Data

Corporate Information

Company Name
MITSUBISHI GAS CHEMICAL COMPANY, INC.

Address
Mitsubishi Building
5-2 Marunouchi 2-chome, Chiyoda-ku,
Tokyo 100-8324, Japan

Originally founded
January 15, 1918

Incorporated
April 21, 1951

Capital
41.97 billion yen

Fiscal Year
Accounts closed in March

Business Locations

Representative Offices
Shanghai Office
Taiwan Office

Research Institutes
Tokyo Research Laboratory
Niigata Research Laboratory
Hiratsuka Research Laboratory

Plants
Niigata Plant
Mizushima Plant
Yokkaichi Plant
- Naniwa Plant
- Saga Plant

Yamakita Plant
Kashima Plant
QOL Innovation Center Shirakawa

Guide to the Mitsubishi Gas Chemical Website

In addition to providing a clear description of our businesses,
we have made it easier to search for product and other information.
The website can also be viewed by smartphone.

URL：https://www.mgc.co.jp/eng

Major Group Companies

Domestic

EIWA CHEMICAL IND. CO., LTD. [C]
FUDOW COMPANY LTD. [C]
GLOBAL POLYACETAL CO., LTD. [C]
GRANOPT CO., LTD. [E]
JAPAN SAUDI ARABIA METHANOL COMPANY, INC. [E]
JAPAN TRINIDAD METHANOL COMPANY, INC. [E]
JSP CORPORATION [E]
KYOUDOU KASANKASUISO CORP. [C]
MGC ADVANCE CO., LTD. [C]
MGC AGELESS CO., LTD. [C]
MGC ELECTROTECHNO CO., LTD. [C]
MGC ENERGY COMPANY LIMITED [C]
MGC FILSHEET CO., LTD. [C]
MGC TERMINAL COMPANY, INC. [C]
MGC WOODCHEM CORPORATION [C]
MITSUBISHI GAS CHEMICAL NEXT COMPANY, INC. [C]
MITSUBISHI GAS CHEMICAL TRADING, INC. [C]
MITSUBISHI ENGINEERING-PLASTICS CORPORATION [C]
POLYOLS ASIA COMPANY, INC. [C]
RYOWA ENTERPRISE CO., LTD. [C]
TOHO EARTHTECH,INC. [C]
TOYO KAGAKU CO., LTD. [C]
YONEZAWA DIA ELECTRONICS CO., INC. [C]

Overseas

AGELESS (THAILAND) CO., LTD. [C]
BRUNEI METHANOL COMPANY SDN. BHD. [E]
KOREA ENGINEERING PLASTICS CO., LTD. [E]
KOREA POLYACETAL CO., LTD. [C]
METANOL DE ORIENTE, METOR, S.A. [E]
MGC ADVANCED POLYMERS, INC. [C]
MGC ELECTROTECHNO (THAILAND) CO., LTD. [C]
MGC PURE CHEMICALS AMERICA, INC. [C]
MGC PURE CHEMICALS SINGAPORE PTE. LTD. [C]
MGC PURE CHEMICALS TAIWAN, INC. [C]
MGC SPECIALTY CHEMICALS NETHERLANDS B.V. [C]
MGC TRADING (THAILAND) LTD.
MITSUBISHI GAS CHEMICAL AMERICA, INC. [C]
MITSUBISHI GAS CHEMICAL ENGINEERING-PLASTICS (SHANGHAI) CO., LTD. [C]
MITSUBISHI GAS CHEMICAL EUROPE GMBH
MITSUBISHI GAS CHEMICAL SHANGHAI COMMERCE LTD.
MITSUBISHI GAS CHEMICAL SINGAPORE PTE. LTD. [C]
PT PEROKSIDA INDONESIA PRATAMA [C]
SAMYOUNG PURE CHEMICALS CO., LTD. [C]
TAI HONG CIRCUIT INDUSTRIAL CO., LTD. [E]
TAIXING MGC LINGSU CO., LTD. [C]
THAI POLYACETAL CO., LTD. [C]
THAI POLYCARBONATE CO., LTD. [C]

[C] Consolidated subsidiary
[E] Equity-method affiliate

MITSUBISHI GAS CHEMICAL COMPANY, INC.

Mitsubishi Building, 5-2 Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8324
TEL: +81-3-3283-5000 Fax: +81-3-3287-0833

www.mgc.co.jp

The content of this booklet is based on current information as of April 1, 2025.