The Origins of MGC

MGC has inherited the DNA of its two predecessor companies—which utilized innovative technologies to achieve numerous firsts. While integrating and deepening their strengths, we have continued to evolve with the aim of solving social issues and creating new value through our two core businesses.

Founding of Mitsubishi Edogawa Chemical Co., Ltd.

1918

Mitsubishi Edogawa Chemical Co., Ltd. became the first company in Japan to successfully manufacture formalin in 1927 and began producing hydrogen peroxide by electrolysis in 1933. Continuing to grow as a leader in formalin derivatives and engineering plastics, the company launched the country's first production of laminate materials for printed circuit boards in 1937 and leveraged a proprietary interfacial polymerization method to start up production of polycarbonate (PC) in 1961.

Incorporation of Japan Gas Chemical Co., Inc.

1951

Japan Gas Chemical Co., Inc. was founded as Japan's first manufacturer of natural gas-based chemicals. Since methanol derived from natural gas was more competitive and of higher quality than existing products, at a stroke the company became a leading manufacturer of methanol. It launched Japan's first operations for the production of ammonia from natural gas in 1957. The 1960s saw the company using a proprietary technology to develop xylene separation and isomerization technology and advancing the development of meta-xylenediamine (MXDA), a raw material of MX-Nylon.

Establishment of Mitsubishi Gas Chemical Company, Inc.

1971

The merger of Japan Gas Chemical and Mitsubishi Edogawa Chemical, both of which emphasized the in-house development of technologies, gave rise to Mitsubishi Gas Chemical Company, Inc. as a chemical manufacturer with a distinctive technological orientation. We have since built competitive advantages by utilizing mutually complementary technologies and establishing an expansive business field that extends from upstream raw materials such as methanol through to specialty chemicals and other downstream products.

Management Resources Supporting MGC's Distinctive Character
Page 15

- Enterprising spirit based on entrepreneurialism
- Diverse in-house development technology
- Value co-creation with a variety of partners
- A Culture of safety

A Track Record Established by a Pioneering Spirit

Thanks to a corporate culture rich in originality and innovativeness, the MGC Group has created numerous groundbreaking Japan- and world-first products and technologies.

Mitsubishi Edogawa Chemical Co., Ltd.

Japan firsts 1927 Manufacture of formalin

Japan firsts 1933 Manufacture of hydrogen peroxide by electrolysis



Japan Gas Chemical Co., Inc.

Japan firsts 1952 Production of methanol

World firsts 1968 Xylene separation technology using superacid



Specialty Chemicals Business

Providing products that are close to end users and conducting operations that directly reflect market demand

Green Energy & Chemicals Business

Marketing a chain of products based on natural gas and mixed xylene

Mitsubishi Gas Chemical Company, Inc.

World firsts 1976 Development of BT laminate

World firsts 2015 Development of plastic pre-filled syringes



Awards 2016 The Ichimura Prize in Industry for Outstanding Achievement:
Development of a special polycarbonate resin with a high refractive index and low birefringence





Social Value Provided by MGC

Page 11

Contribute to the development of an ICT/mobility society

Solve medical and food problems

Solve energy and climate change problems

Business Operations and Main Products

The MGC Group operates two businesses: the Specialty Chemicals Business, which develops leading-edge products that meet market demand, and the Green Energy & Chemicals Business, providing stable supplies of natural gas-based products essential to society.

Specialty Chemicals

Inorganic Chemicals
Primarily focused on cleaning agents for semiconductors

Electronics Materials
Top manufacturer of substrate materials for IC plastic packaging

Optical Materials
Contributes to higher performance of smartphones with world-leading refractive index

Engineering Plastics
Develops engineering plastics

LivingTech and Hygiene Solutions
Supports general industries related to food, pharmaceutical applications, manufacturing, and daily life

The MGC Group

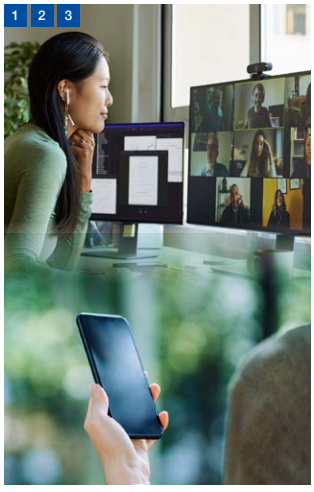
- Hydrogen peroxide
  - Super-pure hydrogen peroxide
  - Hybrid chemicals
  - Electronic Chemicals (EL Chemicals)
- Cyanate monomers
  - BT resin
    - Copper-clad laminates (CCL)
    - Prepreg
    - BT Products
- OPE™ derivatives
- Raw material monomers
  - Optical polymers
  - Eyeglass lens monomers
- Methanol
  - Formalin
    - Iupital™ (Polyacetal resin) (POM)
- MX-Nylon (MXD6)
  - Reny™ (High-performance polyamide resin)
- Bisphenol A (External procurement)
  - Polycarbonate resin (PC)
    - PC sheet
    - PC film
- AGELESS™
- RP System™ PharmaKeep™ Anaero Pack™
- Environmental and hygiene chemicals

Customers

- Semiconductor manufacturers
- Electronic component manufacturers
- Paper manufacturers
- Printed circuit board manufacturers
- Chemical manufacturers
- Optical equipment manufacturers
- Automotive component manufacturers
- Smartphone manufacturers
- Eyeglass lens manufacturers
- Automotive manufacturers
- Electronics and consumer electronics manufacturers
- Office equipment manufacturers
- Food manufacturers
- Pharmaceutical and medical device manufacturers

Social value provided by MGC

ICT area





Mobility area



Certain of the raw materials used by the Specialty Chemicals Business are manufactured at plants under the management of the Green Energy & Chemicals Business. This in-house manufacturing and the Group's quality assurance, technology development, and procurement processes are difficult to replicate, which helps strengthen the competitiveness of the entire Group.

Green Energy & Chemicals

Energy Resources and Environment
Application of technologies for exploration and development of domestic natural gas fields

Resource development technology

Natural Gas

Domestic gas field development
- Higashi-Niigata Oil and Gas Field
- Water-dissolved natural gas field
- Iwafune-Oki Oil and Gas Field

Methanol/ Ammonia production

Iodine

Geothermal Power Generation
- Sumikawa Geothermal Power Station
- Wasabizawa Geothermal Power Station
- Appi Geothermal Power Station

Clean Power Business

Biomass power generation
- Abashiri Biomass Power Plant

Natural gas power generation
- Fukushima Natural Gas Power Station

C1 Chemicals, Life Science
First in Japan to produce methanol using natural gas as a raw material

Methanol production using overseas natural gas
- Saudi Arabia
- Venezuela
- Brunei
- Trinidad and Tobago

Methanol

Ammonia

Methanol protein research

Formalin

Dimethyl ether (DME)

Methyl methacrylate (MMA)

Methylamines

Cyanate ester monomers

Life science-related products

Iupital™ (Polyacetal)

BT resin

High-Performance Products
Manufactures competitive products and derivatives using proprietary technology

Superacid technology

Aromatic aldehydes

Meta-xylene

Purified isophthalic acid (PIA)

Meta-xylenediamine (MXDA)

MX-Nylon (MXD6)

Power producers

Fuel-related companies

Pharmaceutical and medical device manufacturers

Chemical manufacturers

Food packaging manufacturers

Environment-related companies

Engineering plastic manufacturers

Health food manufacturers

Paint and adhesive manufacturers

Chemical manufacturers

Medical and food area

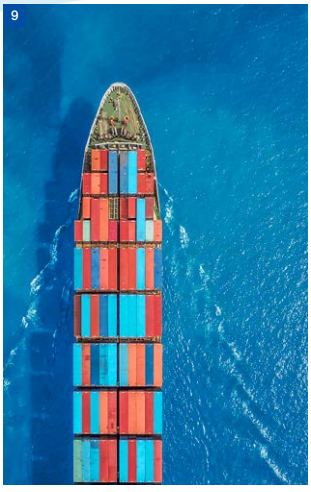



6


7


8

Energy and infrastructure area


9


10


11

Note: For details on products that create social value (items 1 to 11), please see page 11.

Social Value Provided by MGC

Contribute to the Development of an ICT/Mobility Society

Chemical ingredients and raw materials are becoming increasingly important for supporting the development of an ICT/mobility society in areas such as ICT, AI, robotics, blockchain, and CASE. We will respond by strengthening our development of materials and proposal of solutions.



1 BT products

Proprietary materials with superior low-warpage and electrical properties, able to keep pace with the evolution of the semiconductor market



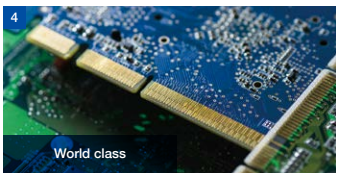
2 Super-pure hydrogen peroxide

Global production capability ensures a stable supply of high-quality products to meet the needs of the most technologically advanced customers



3 Optical polymers

Balances high refractive index with low birefringence, contributing to enhanced camera functionality



4 OPE™ derivatives

Contributes to technological advancement by meeting market demand for excellent resin fillability between wiring traces and high heat resistance and reliability while minimizing electrical signal loss



5 Polyacetal resin (POM)

Promotes efficient base operations and strengthening of sales capabilities through a globally integrated management system for production, sales, and development

Solve Medical and Food Problems

In response to accelerating global population growth and aging, we are expediting development of product groups that will contribute to sustainable food management and lead directly to the enhancement of preventive and predictive medicine and the improvement of medical productivity.



6 Oxygen absorbers (AGELESS™)

Contributes to the reduction of food loss and waste and improvement of distribution quality

7 Oxygen absorbing desiccant (PharmaKeep™)

Contributes to the preservation of the quality of pharmaceuticals and medical devices through integrated oxygen absorption and desiccant functions



8 Aromatic aldehydes

Tailored to customers' requirements using proprietary and efficient production methods



8 MX-Nylon (MXD6)

High gas barrier properties help lengthen shelf lives and reduce food wastage

Solve Energy and Climate Change Problems

The MGC Group is unique as a chemical company with a history of resource development. We are working to achieve a carbon-neutral society by deploying our own distinctive capabilities.



9 Methanol

Promotes an environmentally circular carbon platform as the world's only integrated methanol manufacturer



10 Geothermal power generation

Contributes to GHG emissions reductions through the supply of clean electricity



11 Meta-xylenediamine (MXDA)

Boasts superior rapid curing, anticorrosion, and chemical resistance

