

## KIMICA HONKAN New World-Class R&D Facility with an Excellent Environmental Performance.



A new facility "KIMICA HONKAN" consolidates R&D laboratories, quality control laboratories, welfare facilities, and office space. Advanced technologies supported by employee feedback gives the building an excellent environmental performance and business contingency. A spacious garden extending in front of the building is open to the neighbouring community. The dynamic structural design creates a large open space without pillars and it has a "one-room office" and an "open lab," organically connected by a cross

staircase in the center of the building, designed to encourage collaboration among employees. Furthermore, KIMICA HONKAN is certified as the highest rating of "Five Stars" in the Building-Housing Energy-Efficiency Labeling System (BELS) and it has become a sustainable hub deserving of recognition, such as the "Japan SDGs Award" and the "Environmental Minister's Award," for its people and Earth-friendly initiatives.



# KIMICA Sustainability Report

Ensure Economic, Environmental and Social Value.  
Inspired by the founder's Mottainai spirit.

KIMICA Alginate - a highly valued, sustainable material.

 Nominated for the Earthshot Prize

 JAPAN SDGs Award

 Good Life Award  
Minister of the Environment Award

 Green Purchasing Award  
Minister of the Environment Award 2021

 The Most Valuable Company in Japan Award

 Food Safety, Security &  
Environmental Contribution Award

 Sustainable Selection ★★★



KIMICA supports the Sustainable Development Goals (SDGs).



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Founder Ph.D. in Engineering Fumio Kasahara



What is alginate?  
Common uses of alginate

**Effective use of abundant resources: the spirit of “Mottainai”.**

The origin of KIMICA is the founder’s inspiration when he took interest in discarded seaweed which had drifted ashore.



Factory on the coast at the time of establishment

In 1938, Fumio Kasahara returned from the battlefield as a wounded soldier, and was ordered to undergo medical treatment at a hospital by the sea. Having grown up in an inland prefecture, he had never seen the ocean. He was surprised to find the coastline filled with vast amounts of seaweed stretching along the shore. While local fishermen saw that seaweed as ‘debris’ since it was too hard to eat, Fumio saw this seaweed as a blessing given to Japan in an era when the war was tense and the whole nation was suffering from a dire shortage of goods. He wanted to contribute to the nation by making effective use of this abundant resource. As each day went on, Fumio’s thoughts grew.



In 1961, Fumio received a doctorate in engineering from the University of Tokyo.

Although Fumio had a background in liberal arts, he was self-taught in chemistry while recovering from his war time injury in hospital. Fumio, at the age of 27, established Kimitsu Chemical Research Institute (currently KIMICA) in May 1941. Since no literary material on alginate existed in Japan at that time, he had to start from zero. He devoted himself to the study of "seaweed chemistry" until he died at the age of 71. In his lifetime, he succeeded in industrializing alginate acquiring more than 20 patents, and both in name and reality, Fumio led the dissemination and development of the alginate industry as the "father of seaweed chemistry".

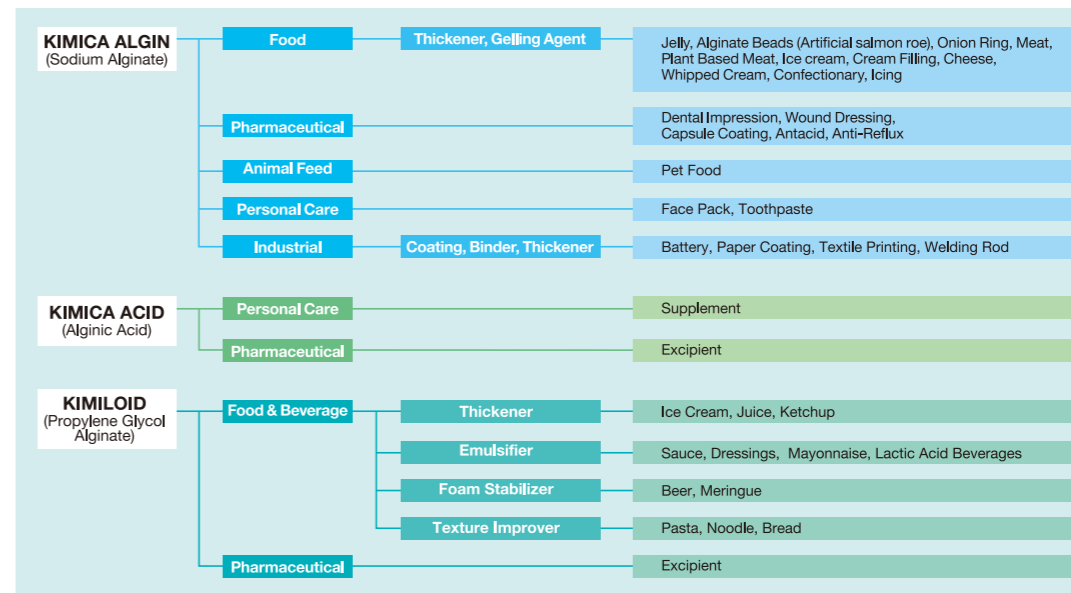
**Alginate is consumed everyday!**  
Alginate is one of the safest additives in the world which supports healthy and prosperous lives.

**Alginate is a natural dietary fiber extracted from seaweed.**

Alginate is a natural polysaccharide uniquely found in brown algae. It is a natural dietary fiber composing 30-60% of dried algae, making it the main component of seaweed. The unique characteristic of alginate regarded seaweed its pliable and supple texture, allowing it to grow in the ocean currents. Alginate is used in many products such as noodles and bread to improve their texture. Sandwiches sold at

convenience stores maintain good texture for long periods of time thanks to the alginate in the bread. It is also used to stabilize beer foam, prevent separation of oils in salad dressings, and to improve the texture of ice cream. Alginate is also used in a wide range of fields such as medicine, cosmetics, and textile processing, and is now an indispensable additive in people’s lives and their health.

**Common uses of alginate**



Fumio's research results were highly regarded academically, and he received a doctorate in engineering from the University of Tokyo in 1961. This was the first time in history that the University had conferred a doctoral degree in engineering to a liberal arts graduate.

The safety of alginate has been evaluated by agencies of the United Nations and recognized as a safe additive that does not require an upper limit of the Acceptable Daily Intake (ADI). KIMICA extracts alginate from natural seaweed, which is a safe resource that is unaffected by BSE, genetic modification, residual pesticides, etc.



Seaweed washed ashore onto the Chilean coast



The raw material for KIMICA's "alginate" is a hard and inedible seaweed that washes ashore onto the South American coast of Chile.

Since its founding, KIMICA has consistently made effective use of "marine debris".

As seaweed reaches the end of its lifecycle, it naturally detaches off from the rocks and drifts in the ocean. A large amount of seaweed grows on the Chilean coast, where cold currents from Antarctica flow, thousands of tons of matured seaweed are washed ashore onto the coast.

This seaweed is hard, inedible and useless, slowly rotting away to release CO<sub>2</sub> and methane gas as "marine debris". KIMICA produces a natural dietary fiber, alginate, by utilizing such discarded resources, allowing the production of valued products without harming the environment.



Drifted seaweed naturally detaches off from its roots



Thousands of tons of seaweed washes ashore every year onto the Chilean coast

Seaweed absorbs carbon dioxide 3 to 5 times more efficiently than land plants on the ground. It purifies seawater and helps maintain marine ecosystems so that fish and sea life can thrive.



Chilean fisherman collecting seaweed



Live seaweed is not harvested. Chilean fishermen take seaweed which has washed ashore, and collects them by hand.

Only licensed fishermen collect drifted seaweed in compliance with the law to protect the environment.

Some manufacturers in the same industry go offshore on large vessels to harvest live seaweed. KIMICA, however, has utilized the manually collected drifted seaweed for 80 years since its establishment. Using manpower to collect seaweed is more laborious and costly, however, with its strength cultivated over 80 years (strong supply chain established locally in Chile, a unique low-cost manufacturing method, etc.), KIMICA achieves both high environmental and economic values and is committed to the sustainability of the seaweed industry for generations to come.



Women also participate in collecting seaweed

Scarcity of seaweed

KIMICA has experienced seaweed shortage due to the El Niño Effect and the overharvesting or hoarding by other vendors. From this experience, the conservation of seaweed resources has come to be recognized as the most important issue for our business to be sustainable. To continue to fulfill our responsibility for a stable supply, KIMICA has established a business model that does not harm marine resources.



Julio A. Vásquez, Ph.D. Professor, Catholic University of the North

"Cutting live seaweed destroys the ecosystem. It affects not only seaweed but also the entire surrounding ecosystem. Collecting drifted seaweed is a great way to make good use of marine resources without harming the marine ecosystems."

Currently in Chile, marine resource conservation policies limit the harvesting of live seaweed. KIMICA has been using drifted seaweed as a raw material long before it was restricted by law.



Northern Chilean coastline facing the desert



Chilean fishermen collecting drifted seaweed



The desert is KIMICA's natural desiccant. The northern coast of Chile facing the Atacama Desert is the perfect environment for drying and storing seaweed.

KIMICA dries seaweed without consuming artificial energy by taking advantage of the desert climate.

Raw seaweed is susceptible to rot and must be dried as soon as it is collected. Since the Chilean coastline faces the Atacama Desert, KIMICA takes advantage of this climate to dry the seaweed without electricity. This natural drying method not only reduces the environmental footprint but is also the origin of what makes KIMICA stand out amongst its competitors.

KIMICA constantly maintains a large stock of high quality seaweed. Acting as a natural desiccant, the dry climate of Chile is ideal for storing the seaweed long-term without affecting its quality. As the price of seaweed fluctuates based on supply and demand, KIMICA's vast inventory is able to act as a buffer which discourages speculative exploitation of seaweed.



Collected seaweed dries under the natural arid desert climate



Vast inventory of dried seaweed in Chile

The collected dried seaweed is crushed and packed. The seaweed collected is not only consumed in Chile, but also exported to Japan and China for use in alginate extraction.

KIMICA's seaweed business has dramatically improved the standard of living of Chilean fishermen.



Two Chilean subsidiary companies contribute to the improvement of the standard of living.

The price of seaweed fluctuates often depending on the balance between supply and demand. Although over 10,000 fishermen make a living by collecting seaweed on the northern coast of Chile, the income of these fishermen has often been susceptible to the ups and downs of the market, leading to a rather unstable lifestyle. Since the 1980s, KIMICA have been steadily buying

seaweed through our two Chilean subsidiary companies, helping them avoid the effect of negative market shocks. Fishermen who were once poor, living in seaside huts, can now build homes in town. Financial independence has made it possible to provide quality educational opportunities, leading to more children attending college.



Local fisherman welcoming visitors from KIMICA

**Chilean fisherman - Juan**  
 "Seaweed prices have stabilized and our fishermen's lives have improved significantly. Many families now make a living by collecting seaweed and depend on the coast for their livelihood."

Through the two Chilean subsidiary companies, KIMICA assures that there is no child labor involved in the collection of its seaweed.



Alginate Extraction Factory in Chiba Plant



An eco-friendly manufacturing method invented by the founder utilizing the unique properties of alginate.

A unique manufacturing method that minimizes the use of electric power, heat sources, and chemicals.

KIMICA utilizes a flotation and precipitation method which uses the difference in gravity to isolate the alginate from the seaweed residue. KIMICA's founder devised this method, which is eco-friendly. While competitors seek whiteness and transparency

by using machines and chemicals, KIMICA makes efficient use of alginate's natural properties. Achieving both low environmental load and cost competitiveness, KIMICA survives to be the only alginate manufacturer in Japan.



Enormous tanks lined up for the alginate extraction process

Since the flotation and precipitation method does not require chemicals (filtering agents) to separate alginate from the seaweed residue, the residue from the KIMICA factories is returned to the earth as a high-quality fertilizer (page 9).



Solar panels on the roof of the Chiba plant



KIMICA's business model praised by the Japanese government as an international role model.

A cost-effective investment that balances economic value and environmental value.

There are 1,322 solar panels installed on the roof producing renewable energy. It generates 425,000 kilo watts per year and reduces emissions of 200 tons of carbon dioxide. The solar panels also suppress high temperatures inside the factory by eliminating direct sunlight to the roof. KIMICA is also proactively working towards increased

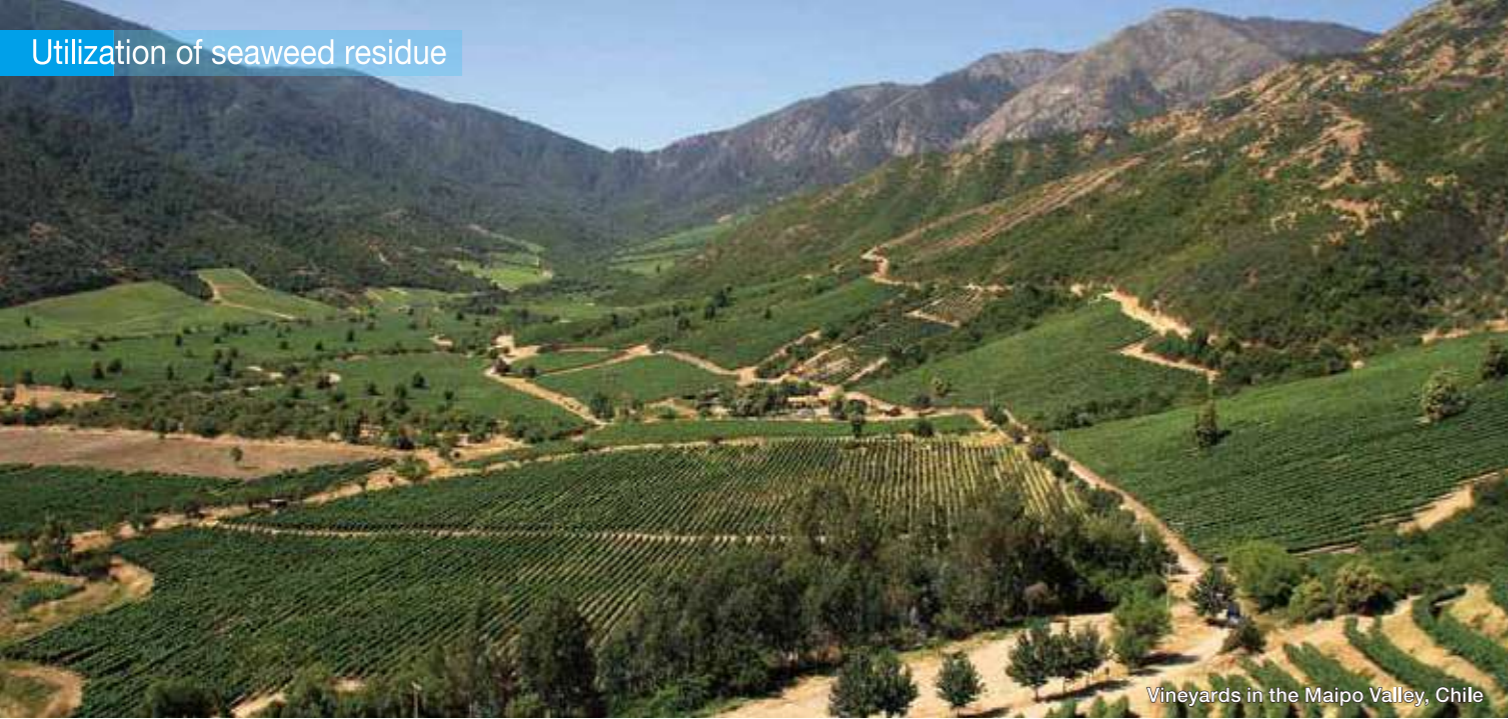
cost competitiveness and reduced environmental impact with initiatives such as using more ecological air compressors and using LED lighting. KIMICA also implemented an "Energy Saving Award" in the improvement proposal system to solicit ideas for reducing the environmental impact from all employees, creating an environmental conservation system for the company as a whole.

KIMICA is striving to reduce the burden on workers by introducing automated robots.



Automatic palletizer that reduces manual labor

Tokyo Head office and the new facility "KIMICA HONKAN" at Chiba Plant have adopted a radiant heat air conditioning system which has an excellent energy-saving performance.



Vineyards in the Maipo Valley, Chile



The by-product after alginate extraction is a high-quality fertilizer, contributing to the improvement of crop yield on neighboring farms.

**The fertilizer is provided free of charge to neighboring farmers and is also used for in-house wine cultivation.**

The by-product of the alginate extraction process is a fertilizer which is rich in high-quality minerals. It can be used to add value to other industries as food for cattle or as a fertilizer to enrich soils. KIMICA supplies this fertilizer to our neighboring farmers free of charge, helping boost their agricultural

output. KIMICA's factory in Chile is located in the world-famous wine region of the Maipo Valley, also known as the "Bordeaux of Latin America". KIMICA's plant is going green across half of the site, growing grapes for wine using the fertilizer from the seaweed by-product in this large area of greenery.



Seaweed residue used as fertilizer by neighboring farmers



Grape vines within the Chilean plant grounds grown using seaweed residue as fertilizer

Located almost in the center of Chile, the Maipo Valley is a world-famous wine region known as the "Bordeaux of Latin America". The warm climate and the small amount of annual rainfall makes it an ideal environment for growing grapes.



Residents filling a container with potable water



Contributing to the welfare and safety of residents in Paine: Free drinking water and the donation of an ambulance and a rescue vehicle.

In the recent years, drought has become a significant problem in Paine, Chile. It has impacted the daily lives of locals who depend on water drawn from wells. KIMICA has installed 9 water tanks to supply free drinking water to all residents. In a joint effort with the Japanese Embassy, KIMICA has

also donated a 4WD ambulance and a rescue vehicle to the local council to ensure the safety of the townspeople. These vehicles, which are made in Japan, are more powerful than the local ones, and have led to being able to save more people's lives.



Donated 4WD ambulance



Donated rescue vehicle



**Diego Vergara**  
Mayor of Paine, Chile  
"KIMICA is the pride of Paine city. I am deeply grateful for KIMICA's efforts and contributions."



**Resident of Paine - Jose**  
"KIMICA has installed nine water tanks throughout our town to ensure we have a constant supply of drinking water. We are incredibly grateful for what KIMICA is doing in our community."

**KIMICA also participates and contributes to community improvement projects in Japan.**

In Japan, KIMICA also contributes to community development by donations to improve social welfare, sponsoring local festivals, volunteering for community cleaning, and visiting high schools for lessons on chemistry. In order to assist the healthcare system which is being stretched thinly during the COVID-19 pandemic, KIMICA also donates to designated medical institutions for infectious disease.



Employees volunteering at community cleanup



Chiba Plant Quality Control Laboratory

KIMICA takes all possible measures towards food safety and quality maintenance.

Obtained FSSC22000 certification. Delivery system compliant with FSMA (Food Safety Modernization Act).

We base all actions on our Food Safety Policy: "We earn the trust and satisfaction of our customers with the world's highest quality". We enforce strict regulations on factory workers, ensuring proper uniform and actions, as well as strictly

controlling the manufacturing and cleaning processes. Not only do we fulfill FSSC22000, our facilities follow FSMA guidelines and strive to deliver safe products to our customers.

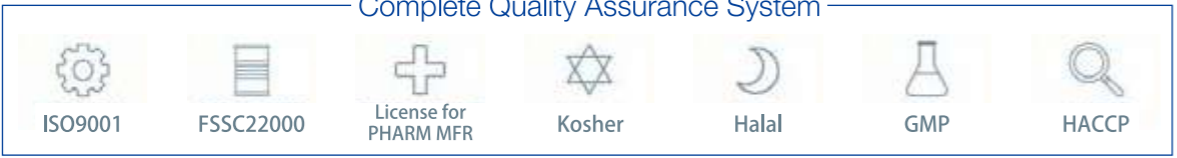
The current quality vigilance and filling/packaging lines use automated machines to prevent the entry of human-derived foreign substances.



Automatic filling device that eliminates human involvement

Current filling and packaging line

Complete Quality Assurance System



ISO22000, international standard in Food Safety Management Systems, is used by most manufacturers in Japan including KIMICA which certifies good quality. KIMICA also has FSSC22000, which is an international standard stipulating a higher level of food safety management than ISO22000.



Cooperating with marine surveys to improve laws and regulations in Chile.

As a member of the Committee of Seaweed Industries, KIMICA takes part in research activities related to fisheries. Data is reported to the Chilean government to improve the legal framework that protects the seaweed in our oceans. KIMICA also promotes research on seaweed farming in collaboration with Catholic University of the North.



KIMICA is a member of the UN WFP Council which has been awarded the Nobel Peace Prize.

The United Nations World Food Program (WFP) helps people suffering from hunger in conflict areas and contributes to regional stability. KIMICA has been active since 2012 on the council of the WFP Association, a certified NPO that supports this initiative and its activities. WFP's activities are highly regarded worldwide and has won the 2020 Nobel Peace Prize.



KIMICA works to achieve the Sustainable Development Goals (SDGs).

KIMICA's business model, which balances economic, environmental, and social value, has been highly regarded by the Japanese government as an "international role model."

Japan SDGs Award Ceremony 2020.

The award was presented by Prime Minister Suga for KIMICA's efforts in adding value and making effective use of drifted seaweed, improving the standard of living of Chilean fishermen, maintaining competitiveness and growing into the industry's top manufacturer.



Source: Official Website of the Prime Minister of Japan and His Cabinet

KIMICA's initiatives are highly valued.

I was impressed by the achievements made through involving all personnels' knowledge and initiatives. Furthering the initiatives would surely contribute to establishing a new post-COVID society supported by the virtuous cycle of economy and environment.\*

Prime Minister  
**Yoshihide Suga**

KIMICA converts natural reserves to resources for humans on a global scale without interfering with the laws of nature. Their initiatives are great references to accelerate global initiatives led by Ministry of the Environment.

Ministry of the Environment Vice Minister  
**Tokutaro Nakai**

KIMICA has made great efforts to achieve sustainable development well acknowledging from their experiences that ensuring sea resources is the highest priority issue for the business continuity. I have no doubt that great relations between the Republic of Chile and KIMICA will proceed further.

Ambassador of Embassy of the Republic of Chile in Japan  
**Ricardo Rojas**

KIMICA has approached social issues through their business initiatives and been the world-leading manufacturer to successfully ensure economic, environmental and social value. Their success in both contributing to achievement of SDGs and remaining competitive is the international role model.\*

SDGs Promotion Headquarters  
SDGs Promotion Round Table Talks

\*Excerpts from complementary speeches and judges' comments made at the Japan SDGs Award.

## KIMICA Alginate - a highly valued, sustainable material.

### Nominated for the Earthshot Prize

Nominated for the "Most Prestigious" Environmental Award of All Time, founded by the Royal Foundation of the Duke and Duchess of Cambridge.

### Good Life Award Minister of the Environment Award

A system sponsored by the Ministry of the Environment that recognizes "living beneficially for the environment and society" and "initiatives that embody the Sustainable Development Goals (SDGs) to improve society".

### Food Safety, Security & Environmental Contribution Award

A system sponsored by the Japan Food Journal awarding "companies that understand the significance of their existence required by society, clarifying their social responsibilities, and developing their businesses with a view to the Sustainable Development Goals (SDGs)".

### The Most Valuable Company in Japan Award

A system sponsored by the Management Society that Values People to recognize companies practicing management aimed at fostering happiness among five categories of stakeholders: employees and their families, outsourced and supplier partners, customers, local communities, and shareholders, thereby improving their performance.

### JAPAN SDGs Award

A system sponsored by the Japanese government to recognize companies and organizations performing superior efforts to achieve the Sustainable Development Goals (SDGs).

### Green Purchasing Award Minister of the Environment Award 2021

A system sponsored by the Green Purchasing Network to recognize initiatives to realize decarbonization, Sustainable Development Goals (SDGs) and a circular economy through sustainable procurement.

### Sustainable Selection ★★

Sponsored by the Sustainable Business Magazine "alterna", certifications given to products, services and brands that reflect sustainable and ethical design philosophies based on the concept of sustainability, corporate social responsibility (CSR) management, Sustainable Development Goals (SDGs), etc.

### Courageous Management Award

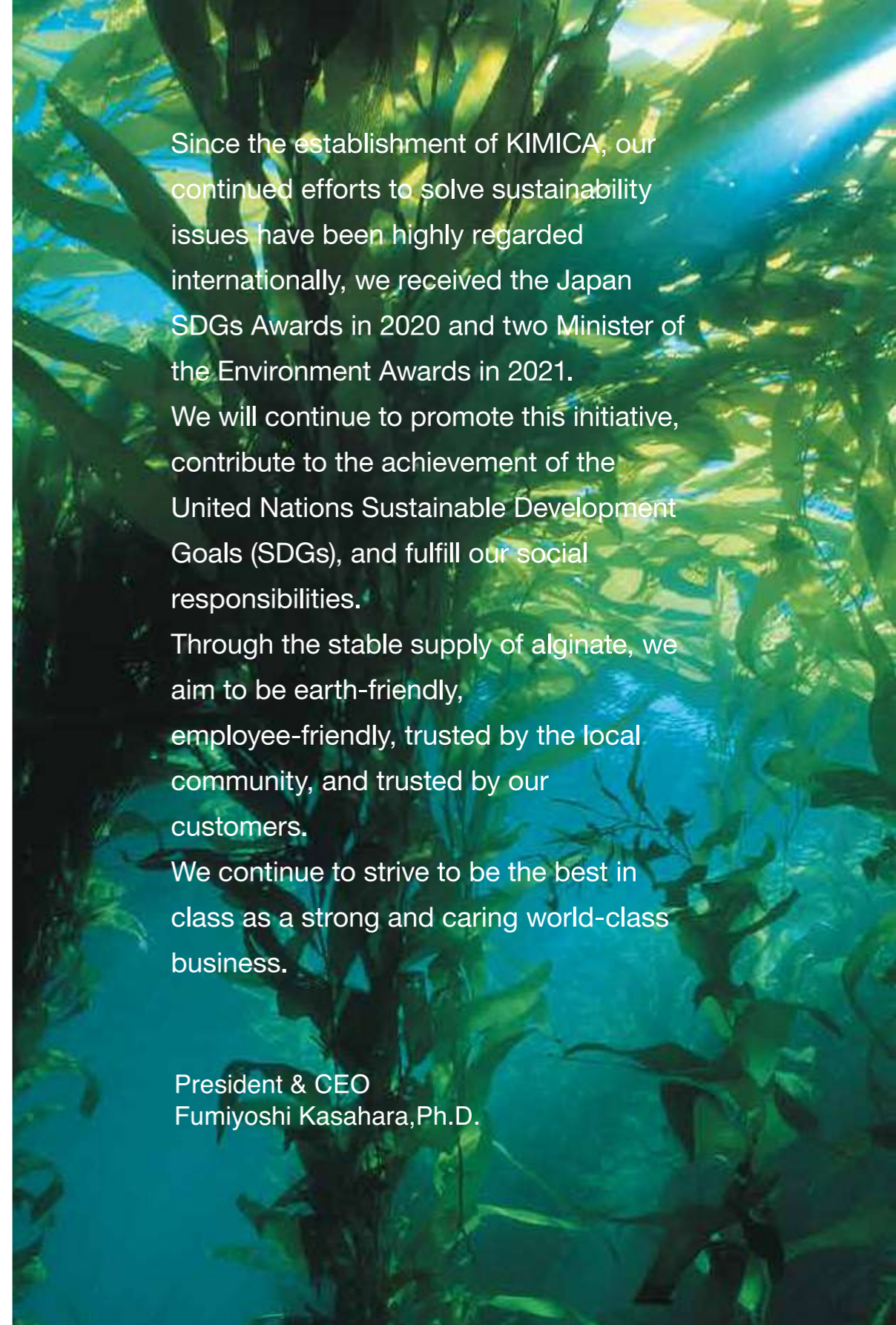
A system sponsored by the Tokyo Chamber of Commerce and Industry that awards small and medium-sized enterprises or groups that are challenging barriers without sticking to past ideals.

CSV

## KIMICA Practices CSV

In 2011, Harvard economist Michael Porter proposed the concept of CSV (Creating Shared Value). CSV is defined as a company solving social issues and gaining economic return through value creation as its core business, and is attracting attention as a new management strategy. KIMICA was founded in 1941 and has been advocating the concept of CSV before its conceptualization in 2011.

Since its founding, KIMICA has been practicing global environmental conservation and contributing to local communities through its core business of manufacturing. KIMICA's trajectory, which has both economic, environmental, and social value, is attracting attention as it is in line with the concept of CSV, and many media appearances and lectures have been requested.



Since the establishment of KIMICA, our continued efforts to solve sustainability issues have been highly regarded internationally, we received the Japan SDGs Awards in 2020 and two Minister of the Environment Awards in 2021.

We will continue to promote this initiative, contribute to the achievement of the United Nations Sustainable Development Goals (SDGs), and fulfill our social responsibilities.

Through the stable supply of alginate, we aim to be earth-friendly, employee-friendly, trusted by the local community, and trusted by our customers.

We continue to strive to be the best in class as a strong and caring world-class business.

President & CEO  
Fumiyoshi Kasahara, Ph.D.

## Recent Media Exposure

- BS Fuji "Want to know! SDGs" (10/03/2022)
- Fuji TV "Future Runners" (15/12/2021)
- BS Asahi program (06/08/2021)
- Tokyo FM "SDGs teacher" (21/03/2021)
- Newsweek international magazine (16/04/2021)
- Yomiuri Shimbun newspaper "Life" (01/12/2021)
- Mainichi Shimbun newspaper "Life navigation・Environment" (14/12/2021)
- Daily Industrial News "The 17 Goals which will change Japan" (05/02/2021)
- Japanese Government official SNS "JAPAN Gov" (24/09/2021)
- The Graduate School of Project Design "Project Design" (July/2021)
- The Tokyo Chamber of Commerce and Industry "Challenging +1" (25/03/2021)
- Sustainable・Business・Magazine "Alterna" (January/2021)
- ...and others



Government of Japan Official Twitter