

Introduction

Corporate Philosophy of Otsuka Holdings

Otsuka-people creating new products for better health worldwide

Corporate Philosophy of Otsuka Chemical

Trusted by individuals,
Trusted by the company,
Trust is the dream of our society.
Building trust with technology
and commitment.
Spreading trust with the people
around the world.

Otsuka Chemical Declaration on Health

Corporate philosophy of Otsuka Holdings: "Otsuka-people creating new products for better health worldwide"

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In order to realize these corporate philosophies, we need to recognize the importance of each employee's mental and physical health.

Otsuka Chemical declares that it will provide workplace environments where employees can have trusting relationships in a vibrant atmosphere, while maintaining and improving their health.

June 2020 Otsuka Chemical Co., Ltd. President and Representative Director: Hiroyoshi Tosa Message from the President

Otsuka Chemical's Vision for the Future
Otsuka Chemical is a company that
collaborates with customers to find
creative new ways to utilize advanced
materials.

Hiroyoshi Tosa

President and Representative Director



Otsuka Chemical has created a wide range of products that improve the lives and health of people all over the world, in keeping with the Otsuka Group's philosophy,

"Otsuka - people creating new products for better health worldwide".

Otsuka Chemical began its business by extracting chemicals from seawater bittern in 1950. Our products and technologies benefit from the gifts of nature and are now being used in a variety of industrial fields. Otsuka Chemical's corporate philosophy is "Trusted by individuals, trusted by the company, trust is the dream of our society. Building trust with technology and commitment. Spreading trust with the people around the world." In B to B business, we have grown up by respecting that "trust".

Now we run our business with our vision as to what we should be, "A company that collaborates with customers to find creative new usage by utilizing advanced materials."

We will expand our business while utilizing materials in close collaboration with our customers, and providing a wide range of solutions.

We, Otsuka Chemical and the members of Otsuka Chemical, take responsibility for our activities and thoroughly respect company compliance. We will ongoingly contribute for better global environment and better life, and create "Unique" products that support to achieve SDGs.



Otsuka Chemical Co., Ltd.

Established: August 29, 1950 Capital: 5,000 million yen

President and Representative Director: Hiroyoshi Tosa

Head Office: 3-2-27 Ote-Dori, Chuo-Ku, Osaka 540-0021, Japan

Employees: Consolidated 1,923 Non-consolidated 511 (as of December 2021)

Net sales: Consolidated*: 65,383 million yen (FY 2021) Non-consolidated: 31,290 million yen (FY 2021)





Locations

Head Office

3-2-27 Ote-Dori, Chuo-Ku, Osaka 540-0021, Japan TEL: +81-6-6943-7701

Tokyo Headquarters

2-2 Kanda-Tsukasamachi, Chiyoda-ku, Tokyo 101-0048, Japan TFI:+81-3-5297-2727

Chubu District

Sakuradori Toyota Bldg. 13F, 4-5-28 Meieki, Nakamura-ku, Nagoya, Japan TEL: +81-52-571-5526

Central R&D, Rubber Chemicals Laboratory, Advanced Polymer Laboratory,

Technology Development Laboratory Kagasuno 463, Kawauchi-cho, Tokushima-shi, Tokushima 771-0193, Japan TEL: +81-88-665-1689

Tokushima Factory

Kagasuno 463, Kawauchi-cho, Tokushima-shi, Tokushima 771-0193, Japan TFI: +81-88-665-1516

Matsushige Factory

139-40 Aza-toyohisakaitaku, Toyohisa, Matsushige-cho, Itano-gun 771-0213, Japan TFI: +81-88-699-7980

Naruto Factory

615 Aza-Hanamen, Satoura, Satoura-cho, Naruto-shi, Tokushima 772, Japan TEL: +81-88-684-2266

Shonan Laboratory

2-26-1 Muraoka higashi, fujusawa-shi, Kanagawa 251-8555, Japan TEL: +81-466-24-5539



Otsuka Chemical Group

Otsuka-MGC Chemical Company, Inc.

Established: April 1, 2004

Address: JMF-Bldg, Higobashi 01, 1-5-16, Edobori Nishi-ku, Osaka, 550-0002, Japan URL: http://www.moc-hh.co.jp/

TEL: +81-6-6445-1501 FAX: +81-6-6445-1502 Busines description: Manufacture and marketing of Hydrazine Hydrate

Otsuka-MGC Chemical Company is the largest maker of hydrazine hydrate in the world and the only company that makes it in Japan. The company was created by spinning off and merging the hydrazine businesses of Mitsubishi Gas Chemical Company, Inc. and Otsuka Chemical Co., Ltd. in April 2004. In addition to its main applications in water treatment, chemical foaming agents, and agricultural chemicals, hydrazine hydrate is now being used in a broader range of fields including electronics, healthcare, power plants, plastics, and chemicals. It is becoming increasingly important as a product indispensable for maintaining today's safe and prosperous lifestyles. The company is proud of its position and responsibilities as the top global manufacturer of hydrazine



hydrate, and it will strive to expand its business into new fields while continuing to contribute to the environment and energy sectors.

Higashiyama Film Co., Ltd.

Established: May 23, 1949 Capital: 1,087 million yen

Address: Sakuradori Toyota Bldg. 13F, 4-5-28 Meieki, Nakamura-ku, Nagoya 450-0002, Japan URL: http://www.hvnt.co.ib/

TEL: +81-52-589-9105 FAX: +81-52-589-9107 Busines description: Manufacture and marketing of Functional film

Established in 1949, Higashiyama Film has a history of more than half a century. It started by making paper-covered wire for electric fan motors and transformers, and then moved on to molding polyester film, using equipment developed in-house. Today, the company provides new materials with high added value by adding to the functionality of polyester film, such as film coatings with optical properties used to make touch panels. Based on a history of trust, Higashiyama Film is meeting customer needs through its ability to select materials in cooperation with raw material manufacturers, its technology for film processing using equipment developed in-house, as well as its human resources and field experience necessary to realize this expertise.



Agribest Co., Ltd.

Established: September 1, 2003 Capital: 80 million ven

Address: 25 Nishihara, Kagami, Ichiba-cho kagami, Awa-shi, Tokushima 771-1610, Japan

TEL: +81-883-36-6201 FAX: +81-883-36-6202 Busines description: Production and sale of agricultural products

Agribest was established to provide consumers with fresh and delicious agricultural products that make the most of the power of nature and can be clearly traced back to the farms of origin. The company offers consumers safe and reliable agricultural products with excellent quality and at a good price. Through crop production using the latest cultivation techniques. Agribest provides reliability to both consumers and farmers, while also pursuing earnings growth.



Yume Tomatoes







Otsuka Turftech Co., Ltd.

Established: March 12, 2007 Canital: 20 million ven

Address: Suburbia-Kishiwada 202, 3-15-22 Habu-cho, Kishiwada-shi, Osaka 596-0825, Japan URL: http://turftech.otsukac.co.jp/

TEL: +81-72-427-4781 FAX: +81-72-426-0597 Busines description: Manufacture and sale of artificial turf and artificial clay tennis courts

With the aim of making even better artificial turf products, Otsuka Turftech carries out continual research from the standpoint of athletes and facility operators. As Japan's top artificial turf maker, the company has an extensive track record with installations in indoor and outdoor sports facilities, including stadiums and tennis courts across the country. It has also created G-CLAY, a next-generation artificial clay for tennis courts, developed especially for the Japanese climate. This product has been certified by the Japan Soft Tennis Association. The use of G-CLAY for the Maruyama Park tennis courts in Hokkaido in 2012 has been the trigger for its use in a variety of places, and it has been decided to use G-CLAY for 20 courts for the 70th National Sports Festival in Wakayama. Otsuka Turftech is now working to further expand sales of G-CLAY.



New-generation artificial clay

Otsuka Ohmi Ceramics Co., Ltd.

Established: July 14, 1973 Capital: 300 million ven

Address: 3-2-21, Ote-Dori, Chuo-Ku, Osaka, 540-0021, Japan

TEL: +81-6-6943-6695 FAX: +81-6-6943-6487 Busines description: Plan, design, manufacture and construction of ceramic board(toban)

Since its foundation in 1973, Otsuka Ohmi Ceramics has offered a product lineup in three main categories—large ceramic boards, terracotta, and OT ceramics with a wide array of products to atisfy our customers' needs, from flat and three-dimensional art materials to architectural pieces and decorative works for living spaces. Utilizing our highly acclaimed reproduction techniques. we have worked to document and preserve valuable cultural heritage on ceramic boards, which includes full-scale restorations of the murals found in the ancient Kitora burial mound. At the





Otsuka Museum of Art, Otsuka Ohmi Ceramics has reproduced more than 1,000 pieces of art to their original size using ceramic boards.

^{*} The consolidated figures have been calculated using data from Otsuka Chemical Co., Ltd. and its subsidiaries (including overseas affiliates), and have not been audited.

Worldwide Network

Otsuka Chemical maintains a worldwide network in 6 countries gaining trust globally.

Since establishing a company to manufacture and market hydrazine in South Korea in 1988, Otsuka Chemical has established production and marketing bases around the world. These companies strive every day to earn respect as good corporate citizens in their respective

Bases Outside Japan

countries and communities.



1 KOC Co., Ltd.

Established: November 2, 1988 Capital: W15billion Address: 67-34, Ijin-ro, Onsan-eup, Ulju-gun, Ulsan, 44998, Korea TFI: +82-52-240-1200 FAX: +82-52-238-5886 Business description: Manufacture and marketing of hydrazine hydrate URL: http://www.ikoc.co.kr



2 Higashiyama (Shanghai) Film Co., Ltd.

Established: December 29, 2005 (capital invested November 13, 2014) Capital: US\$2.83million Address: Room 505, Office Tower 3, No.29,33 Suhong Rd, Minhang District, Shanghai, P.R. China 201106 TEL: +86-21-3471-0325 FAX: +86-21-3471-0028 Business description: Sales and marketing of functional film



8 P.T. Lautan Otsuka Chemical

Established: July 17, 1989 Capital: US\$22.5million Address: Graha Indramas, 5th floor Jl. AIP II K.S Tubun Raya No. 77, Jakarta 11410 Indonesia TEL: +62-21-5367-1251 FAX: +62-21-5367-1250 Business description: Manufacture and marketing of foaming agents URL: https://lautanotsuka.com



4 Hebron S.A.

Established: November 22, 1961 Capital: € 330,000 Address: Calle Girona, 20 08120 -La Llagosta, Barcelona, Spain TEL: +34-93-574-2011 FAX: +34-93-560-1559 Business description: Manufacture and FAX: +34-91-885-5501 marketing of general chemicals. especially resin additives URL: https://www.hebronsa.es



Trocellen Iberica S.A.

Established: December 20, 1988 (capital invested July 31, 2006) Capital: €6.664million Address: Avda Avilla s/n F-28804 Alcala de Henares, Madrid, Spain TEL: +34-91-885-5500 Business description: Manufacture and marketing of polyolefin foams URL: https://trocellen.com/



6 Otsuka Chemical (Shanghai) Co., Ltd.

Established: October 26, 2016 Capital: US\$2.0 million Address: Room 505, Office Tower 3, No.29,33 Suhong Rd, Minhang District, Shanghai, P.R. China 201106 TEL: +86-21-6236-8548 FAX: +86-21-6236-8160 Business description: Marketing for products of Otsuka Chemical and Zhangjiagang Otsuka Chemical in China



Established: October 26, 2004 Capital: US\$15million Address: No. 33, Nanhai Road, Jiangsu Yangzijiang International Chemistry Industrial Park, Zhangjiagang City, Jiangsu 215635, China TEL: +86-512-5690-7600 FAX: +86-512-5690-7616 Business description: Manufacture and Business description: Research and development, parts and Assembling parts marketing of flaky titanate and special and assessment of high-valued-added compounds compounds URL: http://zjg.otsukac.com.cn



Zhangjiagang Otsuka Chemical Co., Ltd. Otsuka Material Science & Technology Noble Skill Limited (Shanghai) Co., Ltd.

Established: February 27, 2004

Address: Unit801, 8F, Zung FU

Business description: Resin, Resin

Capital: HK\$28.14million

Qurry Bay, Hong Kong

TEL: +852-2861-0995

(capital invested January 10, 2014)

Industrial Building, 1067 King's Road,

Address: 1st Floor AB Area, Building No.10, No.471 Guiping Road, Xuhui District, Shanghai 200233, China and combination agents



Established: February 6, 2014 Capital: US\$27million Address:100 The Lakes Parkway, Griffin GA 30224 USA TEL: +1-678-572-4665 Business description: Manufacturing and sale of Terracess (fiber-free potassium titanate) URL: https://otsukachemicalamerica.com/



1 Otsuka Chemical (India) Pvt. Ltd.

Established: January 2, 2006

Capital: Rp415million Address: 402 JMD Pacific Square. Sector 15, Part-2, Gurgaon (Haryana) 122001, India TEL: +91-124-4597979 FAX: +91-124-4597980 Business description: Manufacture and marketing of pharmaceutical

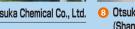


URL: https://www.otsukaindia.com/



Otsuka South China Precision Instruments(Shenzhen) Co., Ltd.

Established: November 13, 2011 (capital invested January 10, 2014) Capital: RMB6.22million Address: Block B10, A-5 District, Tongfuyu Industrial Zone (Buchong), Shajing, Baoan, Shenzhen, Guangdong, China TEL: +86-755-8144-4001 FAX: +86-755-8144-4008 Business description: Manufacture and sale of plastic precision parts



Established: March 21, 2013 Capital: RMB10million TEL: +86-21-6091-7675 FAX: +86-21-6191-2937

URL: http://www.otsukamst.com.cn/

Subsidiaries Outside Japan

Aiming to Earn Global Trust

Since establishing a company to manufacture and market hydrazine in South Korea in 1988, Otsuka Chemical has established production and marketing bases around the world. The company is striving each day to enhance its reputation as a good corporate citizen in countries and territories worldwide.

We contribute to the lives of people around the world by utilizing the power of materials.

South Korea



KOC Co., Ltc

1211



Otsuka Chemical America, Inc.



Zhangjiagang Otsuka Chemical Co., Ltd.

Indonesia



P.T. Lautan Otsuka Chemical

Spain



Trocellen Iberica S.A.



Spain

Hebron S.A.





Otsuka Chemical (India) Pvt. Ltd.

Otsuka Group

Corporate Philosophy of Otsuka Holdings

Otsuka-people creating new products for better health worldwide

For Sustainable Society

Goal of Otsuka Group

To become an indispensable contributor to people's health worldwide



Overview

The Otsuka group of companies, whose origins date back to 1921, aims to contribute to the health of people around the world. It aims to do so through two main pillars: the pharmaceutical business for the diagnosis and treatment of diseases and the nutraceutical*1 business to support the maintenance and promotion of everyday health.

The company's culture, summarized in a few words as, "Ryukan-godo" (by sweat we recognize the way), "Jissho" (actualization) and "Sozosei" (creativity), have been fostered by successive Otsuka leaders. These are emphasized by our 47,000*2 employees across 200 group companies in 33 countries and regions who strive to create and market unique products and services.

Organizational Structure

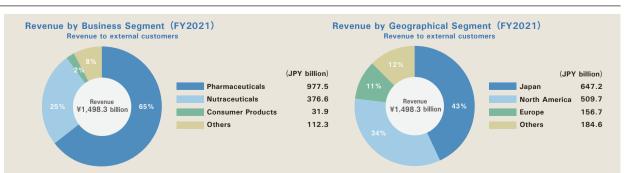


Milestones

- 1921 Founded as a chemical raw material manufacturer in Naruto City, Tokushima Prefecture
- 1946 Started infusion (intravenous solutions) production, entering the pharmaceuticals field
- 1965 Launched nutritional drink (ORONAMIN C DRINK), entering the nutraceuticals field
- 1971 Otsuka Pharmaceutical Co., Ltd. established the groups first pharmaceutical research laboratory
- 1973 First expansion outside Japan, in Thailand and the US
- 2008 Established Otsuka Holdings as a group holding company aiming to increase sustainable corporate value
- 2010 Otsuka Holdings Co., Ltd. listed on the Tokyo Stock Exchange



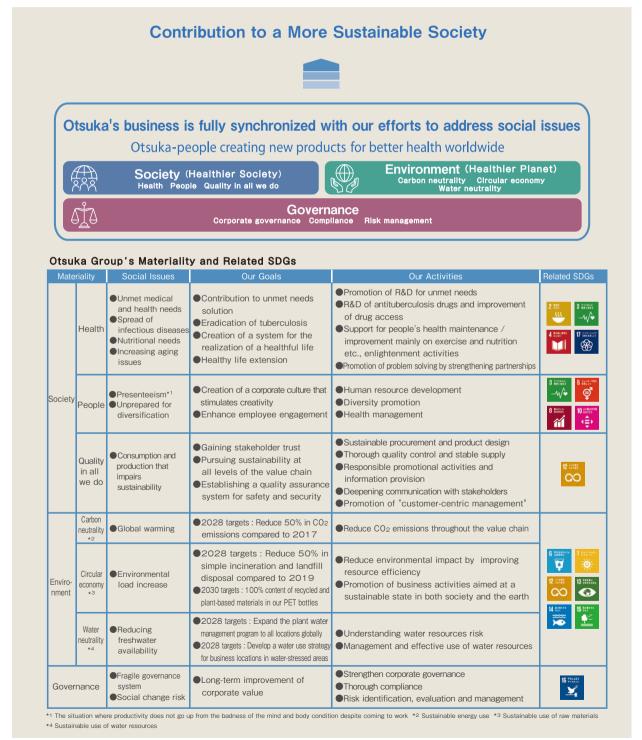
Financial Highlights



For more information about Otsuka Holdings: https://www.otsuka.com/en/ For information about Otsuka's CSR: https://www.otsuka.com/en/csr/hd_activity/

Sustainability Mission

Address social issues such as the evolution toward a healthier and more sustainable society, while simultaneously achieving growth. These activities are all supported by a comprehensive governance system.



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For more information about Otsuka group's CSR: https://www.otsuka.com/en/csr/

History

Otsuka Chemical has continued to grow by living through technology and heartfelt commitment.

Since its founding in 1950, Otsuka Chemical has won the trust of numerous customers as a top manufacturer

up to the trust of its customers

and marketer of chemical products. Going forward, Otsuka Chemical will pursue further growth as a core company in the Otsuka Group.

1950	Otsuka Chemicals Inc. established.	1988	Otsuka Chemical Korea Co., Ltd.	2003	Agribest Co., Ltd. established.	2013	Otsuka Chemical Co., Ltd. established Otsuka Material
	Manufacture and marketing of potassium nitrate and hydrazine started.		(Present KOC Co., Ltd) established.				Science and Technology (Shanghai) Co., Ltd. (China)
	Tokushima Factory (present Naruto Factory) established.	1989	P.T. Lautan Otsuka Chemical (Indonesia) established.	2004	Otsuka-MGC Chemical Company, Inc. established. Zhanjiagang Otsuka Chemical Co., Ltd. (China) established.	2014	Noble Skill Limited (Hong Kong) acquired. Otsuka South China Precision Instruments (Shenzhen)
1956	Uniform AZ foaming agent launched.		Hebron S.A. (Spain) acquired.				Co., Ltd. acquired. Otsuka Turftech Co., Ltd. became a subsidiary.
1965	Oronamin C Drink launched. (Note: Otsuka Pharmaceutical Co., Ltd., markets Oronamin C Drink at present.)	1990	Antibiotic intermediate GCLE launched.	2006	Otsuka Chemical (India) Pvt. Ltd. established. Capital invested in Trocellen Iberica S.A. (Spain).		Otsuka Chemical America, Inc. established. TERPLUS production facility completed at Tokushima Factory. Higashiyama Film Co., Ltd. Higashiyama (Shanghai)
1968	Production and marketing of Bon Curry started. (Note: Otsuka Foods Co., Ltd., markets Bon Curry at present.)	1991	$\beta\text{-Lactamase}$ inhibitor YTR bulk drug manufacturing facility completed.	2009	Otsuka Chemical Holdings Co., Ltd. merges with subsidiary Otsuka Chemical Co., Ltd., and company name changed to		Film Co., Ltd. and Higashiyama Film Korea Co., Ltd. (Present Higashiyama Film Co., Ltd. Korea Office) 2009 acquired.
1969	Imagire Factory (now Tokushima Factory) opened. Capital increased to 2.4 billion yen.	2000	Matsushige Factory opened. Advanced titanate products TERRACESS launched.		Otsuka Chemical Co., Ltd., and company hame changed to Otsuka Chemical Co., Ltd. Became a wholly owned subsidiary of Otsuka Holdings Co., Ltd. through a share exchange.	2015	TERRACESS production facility completed at Otsuka Chemical America, Inc.
1974	Hydrazine manufacturing equipment increased.					2016	Otsuka Chemical (Shanghai) Co., Ltd. established.
1977	Food additive (flavoring agent) Maltol launched.	2002	Otsuka Food Co., Ltd., made a subsidiary through share exchange. Capital increased to 3.3 billion yen.	2010	AgriTechno business became independent and established Otsuka AgriTechno Co., Ltd. (Present OAT Agrio Co., Ltd.)	2017	Expansion of GCLE plant of Otsuka Chemical (India)
1978	The potassium titanate whisker "TISMO" sales.		Company name changed to Otsuka Chemical Holdings Co., Ltd.		Otsuka Holdings listed on the First Section of the Tokyo		Pvt. Ltd.
1984	Merged with Otsuka Furniture Co., Ltd. Capital increased to 2.8 billion yen. Furniture division established.		Moved to an operating holding company structure. Otsuka Chemical Co., Ltd., established to take		Stock Exchange in December 15th.	2019	Succeeded part of the Cefixime business from Astellas Pharma Inc.
	Company name changed to Otsuka Chemical Co., Ltd.		over the chemicals and agrochemicals business Otsuka Furniture MS Co., Ltd. established to take over the furniture business.	2011	The 90th anniversary of the Otsuka group.	2020	Shonan Laboratory established in Fujisawa-shi, Kanagawa.















About Otsuka Chemical Business Divisions

Automotive and Mobile **Technologies** Division

Otsuka Chemical succeeded in establishing the hydrazine industry in Japan. With a focus on hydrazine derivatives, and using advanced synthesizing technologies, it provides high-performance polymers and functional chemicals catering to a wide range of needs.

It also researches, develops and manufactures resin compounds and other new materials in areas such as organic and inorganic materials.

The Automotive and Mobile Technologies Division works to develop a diverse range of high value-added materials that match the needs of the smart device and mobility markets (among others), based on chemical technologies developed thus far in the fields of organic, inorganic and polymer chemistry. The division seeks not only to propose materials, but also to propose a range of solutions to various industries from a global

For example, Otsuka Chemical engages in hydrazine derivatives business, using hydrazine as a starting point. and developed the foaming agent and organic materials business operations. A distinctive feature of our company is that we are able to conduct high-quality and cost-competitive business operations using an integrated production approach, from the raw material stages. This makes it possible for us not only to synthesize general-use hydrazine derivatives but also offer custom synthesis from lab scale to plant scale, according to the







In the inorganic salts business with a focus on sodium chloride, which the Otsuka Group began producing since the time of its establishment, as well as the ceramic products business derived from it, Otsuka Chemical develops, manufactures and sells a diverse range of functional fillers including brake materials, resin reinforcements and conductive materials. Thermoplastic compounds that utilize these ceramic technologies are also used in many fields. We research and develop plastics with typical performance characteristics that include tribological characteristics, precision reinforcement, conductivity, and dielectric properties. We also manufacture parts by injection molding and modeling using 3D printers.

In the advanced polymer business we use a proprietary living radical polymerization technology called "TERP" to produce and sell the advanced polymer TERPLUS. We currently supply TERPLUS for a wide range of applications, including pigment dispersant agents and adhesives.







By focusing on advanced materials and always pursuing technological innovation, Otsuka Chemical aims to create products that help realize more prosperous lifestyles. Centered on hydrazine, inorganic materials, compound materials, and pharmaceutical intermediates, the company provides products globally in the fields of automobiles, electrical and electronic products, housing, and medicine.

Main Products



Adipic dihydrazide



CHEMCATCH



TERPLUS DITES

UN1993 -----

TERPLUS



Inorganic salts

Aldehvde Absorben

CHEMCATCH (deodorizers)

Foaming agent for resin

Hydrazine hydrate derivatives

hvdrazine salts

heterocyclic compounds

hvdrazide compounds

Adipic dihydrazide ,Dodecanediohydrazide, Sebacic dihydrazide Isophthalic acid dihydrazide and more

Rust Preventive Agents

SHADAN (corrosion inhibitors, detergents, surface preparation agents)

High performance polymer

●TERPLUS (dispersant and pressure sensitive adhesive)

Azo type initiators

■AIRN ADVN AMRN ACVA

■Polymerization initiator OTAZO-1.5 MAIR

TISMO (staple material for disk brake pads)

● TERRACESS (scale-like filler, raw material for nextgeneration disk brake pad)

RUVA (reactive ultraviolet absorbing agent)

Compound materials (resin compounds with TISMO or TERRACESS)

● POTICON (high rigidity, surface characteristics, tribological characteristics)

POTICON for films

Molded parts

Electric double layer capacitors (EDLC)

Q-CHARGE (electrolyte for use in capacitor)

Life Science Division Otsuka Chemical is well known worldwide for its development and manufacturing of pharmaceutical intermediates, synthetic reagents, and APIs using proprietary technologies.

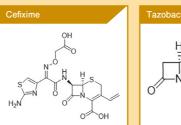
Otsuka Chemical researchers independently developed GCLE, an intermediate for cephalosporin antibiotics. Building on the technology accumulated during that process, the company is undertaking R&D into β -lactam and other pharmaceutical intermediates and bulk drugs. The company also manufactures pharmaceutical intermediates and synthetic reagents that use aromatic compounds and their derivatives. These product lines are not only in the field of pharmaceuticals, but have a wide range of applications as electronic materials, cosmetic intermediates, food flavor agents, and so forth, and are well known in Japan as well as internationally. In 2006, the company established Otsuka Chemical India, which is now a manufacturing plant for GCLE. The company supplies APIs such as oral antimicrobial agent Cefixime and CDMO service for Oligonucleotide/ Peptide APIs.







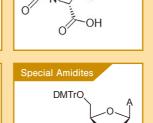
Main Products

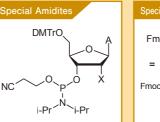


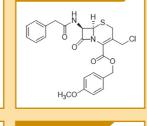
N . H2O

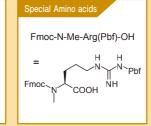
ÒН

(HOBt · H₂O)









APIs (Oligonucleotide/ Peptide)

Intermediates (Special Amino acids/Special Amidites)

Cefixime(Antibiotic)

■Tazobactam(β -lactamase inhibitor)

other intermediates, reactants, fragrance chemicals

p-Hydroxyphenethyl alcoho

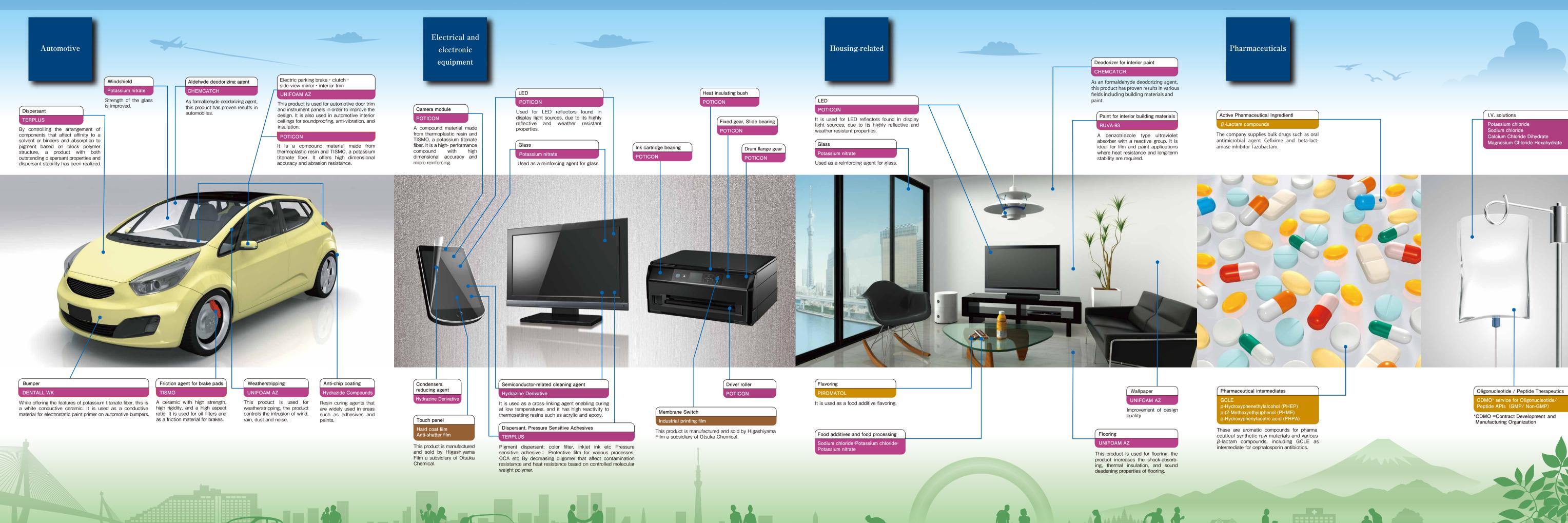
p-(2-Methoxyethyl)phenol

p-Hydroxyphenylacetic acid

Levulinic acid

●1.2.3-Triazole

● 2 -Methyl - 3 -hydroxy- 4 -pyrone (Maltol) 2 - Ethyl - 3 - hydroxy - 4 - pyrone (Ethyl Maltol)



Research Laboratories in Japan

Focusing research and development on creating the products the world needs

The research and development division of Otsuka Chemical conducts research and develops products for the global market using world-class technology, based on the philosophy of "contributing to the customer using innovative technology."

The organization includes the Central R&D Laboratory, Rubber Chemicals Development Laboratory, Advanced Polymer Laboratory, Shonan Laboratory, and the Technology Development Department, with activities ranging from basic and applied research to prototyping at intermediate testing facilities and final product creation.

Central R&D

Aiming at the development of revolutionary only one product



Otsuka Chemical conducts R&D that contributes to society by creating core technologies, building confidence in technologies, and achieving sustainable development. The Central R&D Laboratory aims to develop innovative, one-of-a-kind products through

research and development from the perspectives of new market needs and technology seeds. These efforts are based on component technologies developed in past research activities as well as on core technologies acquired through product development in the fields of inorganic materials, resin compound materials and pharmaceuticals development. To achieve this goal, rather than relying solely on in-house resources, the laboratory also taps external resources, domestic and worldwide, to accelerate development.

In the field of inorganic materials, research and development is focused primarily on titanates. Products such as TISMO and TERACESS, which are characterized by their excellent frictional stability, micro-level reinforcement and tribological characteristics are used in applications such as brake pads for automobiles. The same basic technologies are also being utilized in efforts to expand into other fields such as batteries and coatings. The laboratory is also developing functional composite materials that skillfully combine the characteristics of TISMO with various engineering plastics, expanding into

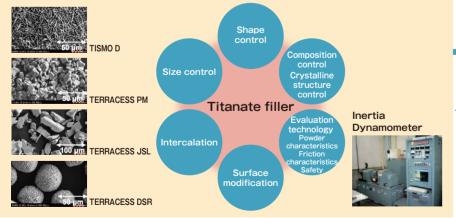
a wide range of fields such as auto parts and smartphone components. In the pharmaceutical field, we are establishing basic manufacturing technolo-

gies for medium-molecular drugs (peptide and nucleic acid drugs), which are drawing attention as next-generation pharmaceuticals.

In line with Otsuka Chemical's vision of becoming "a company that collaborates with customers to find creative new ways to use advanced materials," the Central R&D Laboratory seeks to create technologies and products that will serve as the basis for this

Development of Titanate for Friction Materials

We are pioneering new chemical frontiers in the effects of titanate to meet the needs of diverse customers.



phenolic resin, abrasive, and lubricant Disk brake page Customer needs ·Friction coefficient stability Decrease wear amount ·Decrease NV (noise, vibration)

·Environmental safety, etc.

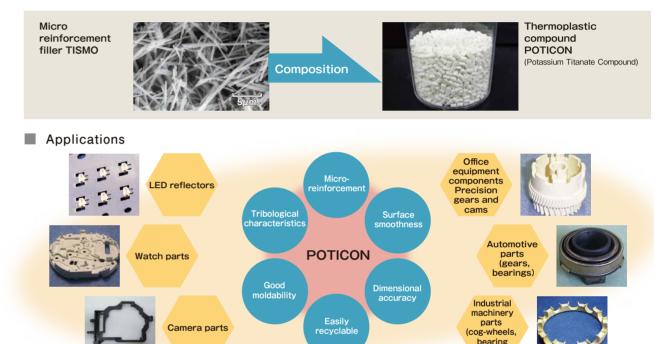
Composition including potassium titanate

Recent conference presentations

- ·SAE Brake Colloquium & Exhibition (USA)
- 2015: Comparison of MPU on Friction Materials between Formulations
- 2017: Interactions of NBR and Titanate on the Friction Surface as Related to μ Stability Effects in Low Load Conditions China Friction and Sealing Material Association (China)
- 2016: Benefits of Titanate in Low-steel Formulation and a MetalPick Up Phenomenon 2017: Chemical Effects of Titanate Compounds on the Thermal Reactions of Phenolic Resins in Friction Materials
- 2014: Microstructure of Metal Pick up and its Surroundings
- 2019: Chemical Effects of Titanate Compounds on the Friction Surface part 2
- Brake Forum in Japan (Japan).
- 2016: Chemical Effects of Titanate Compounds on the Thermal Reactions of Phenolic Resins in Friction Material

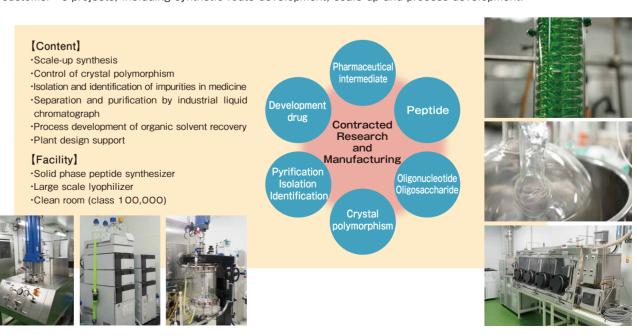
Development of the Resin Compound POTICON

We propose optimal compounds for various precision parts and sliding parts.



Contracted Research and Manufacturing

Based on our cultivated organic synthesis technology and production technology, we support from the initial stage of customer's projects, including synthetic route development, scale up and process development.





Advanced Polymer Laboratory

Proposing new market value with proprietary controlled radical polymerization technology

The Advanced Polymer Laboratory is conducting research and development in the field of functional polymer materials using the TERP method: a proprietary controlled radical polymerization method developed in collaboration with Yamago Laboratory, Kyoto University. The TERP method is characterized by its advanced molecular weight control, wide-ranging versatility that allows it to be applied to various monomers, and high functional group resistance. These characteristics make it possible to design various functional polymer materials with new

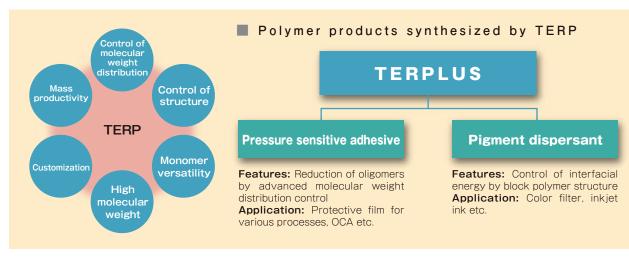
properties that did not previously exist. So far we have developed applications such as adhesives that take advantage of the features of molecular weight control in the high molecular weight domain, and pigment dispersants that can be created in a wide range of designs utilizing monomer versatility in block copolymer synthesis, which is another feature of controlled radical polymerization. These products have been launched onto the market under the TERPLUS brand name.

We are also developing commercial production processes utilizing pilot facilities at a dedicated TERPLUS plant, situated inside our Tokushima Plant. Moving forward, we will continue to propose new value to the market by developing functional polymer materials utilizing the TERP method.



Development of Functional Polymer Materials

We propose the functional polymer materials for market demands by the advantage of Otsuka's controlled radical polymerization technology "TERP".



The technical awards of the adhesion society of Japan in 2013 Inoue Harushige prize in 2018

Shonan Laboratory

Pursuing core competences through open innovation

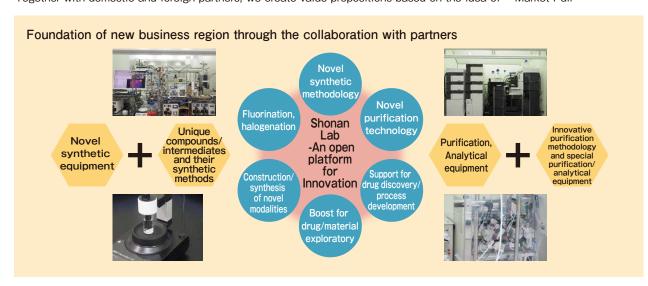
Working under its mission of contributing continuously to the creation of new Otsuka Chemical business operations, Shonan Laboratory will continuously explore new technology seeds and create core technologies together with partners, based on the keywords of open innovation and the construction of a next-generation research environment. In today's world, it is becoming more difficult to conduct research on a completely in-house basis, and it is necessary to form partnerships with other companies, universities and research institutes, etc., in order to structure our technologies, ideas, know-how and insights together with those of our partners, in order to co-create new technologies and businesses. In view of this, and based on the keywords of open innovation and the construction of a next-generation research environment, our Shonan Laboratory—situated in a corner of the open lab space at Shonan Health Innovation

Park (Shonan iPark)—is engaged in a wide range of joint development and joint research efforts, with partners from both within and outside Shonan iPark and from overseas. Within the ecosystem of Shonan iPark, the lab will seek to further combine the component technologies we have developed in the organic and inorganic fields, co-create innovative technologies, and contribute to the expansion of business operations giving shape to the power of materials, such as in the outsourced manufacturing and development of medium-molecular drugs.



Creation of new technology and foundation of new business region

Together with domestic and foreign partners, we create value propositions based on the idea of "Market Pull"



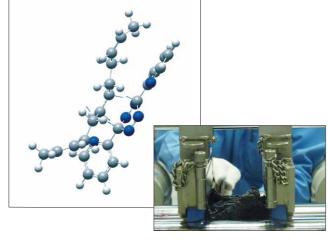


Rubber Chemicals Laboratory

Contributing to the creation of an environmentally friendly mobility society with proprietary technologies developed in hydrazine chemistry

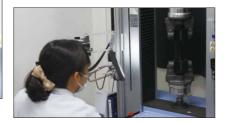
The Rubber Chemicals Development Laboratory conducts research and development of specialized organic chemicals that can improve fuel economy and durability of automobile tires, with activities ranging from chemical structure design of original new compounds and their organic synthesis, to basic evaluation of their rubber material properties. Otsuka Chemical is engaged in the efficient development of new additives, by introducing equipment that enables evaluation of basic rubber properties from in-house production of rubber test samples.

Through these evaluation and analysis technologies, we also aim to be able to propose appropriate additive types and methods for utilizing them to companies that produce rubber products. The laboratory is also responsible for global commercialization and production technologies for these additives.









Tires are important components that relate to the safety, environmental performance and comfort of cars. The performance of tires is affected greatly by the properties of the rubber materials used.

World-first original compounds developed by Otsuka Chemical have been adopted for use in rubber materials for high-performance tires. Although these compounds are not conspicuous because they are found in only small amounts in rubber materials, they contribute greatly to today's mobility society. In particular, chemical technologies for fuel-efficient tires—which lead to improved fuel economy in cars—contribute to a reduction in carbon dioxide on earth, also leading to reductions in environmental impact.





Technology Development Laboratory

Creating competitiveness in the global market through development and production

The Technology Development Department works toward its mission of continuing to expand Otsuka Chemical's existing business operations through sustainable innovation. Our products are produced and sold widely, not only in Japan but also overseas, and our activities are expanding on a global scale. The needs of customers around the world are diverse, but

high quality, low price and stable supply are universal requirements. Otsuka Chemical's greatest mission is to meet these needs while at the same time competing against rivals from all over the world.

Our distinctive characteristic is that we offer a combination of organic, inorganic and material-type products. By bringing together engineers from different fields, we drive efforts in research and development themes to enhance production site capabilities, enhance product power and achieve future commercialization, which are not possible simply by extension of existing products.

With regard to safety, we are implementing innovative and safe process development under the slogan of "ensuring safety with safety processes and safety equipment." We will continue to deliver our products to customers around the world with a high level of trust and reliability, through an uncompromising approach to ensuring strong manufacturing in all aspects.

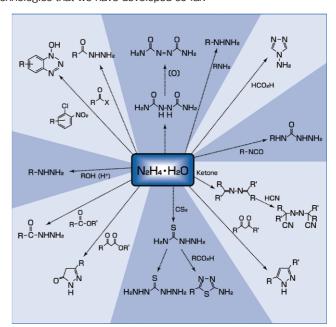


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Production Headquarters

Otsuka Chemical is a pioneering company in the hydrazine industry. We have been engaged in the development of various functional hydrazine derivatives and manufacturing technologies for many years.

We also cater to customer needs for commissioned manufacturing, including the development of manufacturing processes, based on the various manufacturing technologies that we have developed so far.



Factories in Japan

As an environmentally friendly company, Otsuka Chemical ensures its factories address global warming.

Otsuka Chemical has three production factories in Japan, all in Tokushima Prefecture. These factories actively engage in environmental initiatives, including efforts to save energy, reduce environmental impact, and create environmentally friendly systems. All three factories have obtained ISO 1 4001 environmental management certification.

Tokushima Factory



The Tokushima Factory opened in 1969 and began production of hydrazine. The following year it began production of Bon Curry and other foods in retort pouches. (Today, the Otsuka Group's foods business is operated by Otsuka Foods Co., Ltd.) In 1973, the factory acquired a license to manufacture pharmaceuticals.

Main Production Lines:

TISMO (functional inorganic fiber), TERPLUS(dispersant and pressure sensitive adhesive) Maltol (flavor enhancer), resin additives and softeners, resin modifiers Hydrazine Derivatives

Kagasuno 463, Kawauchi-cho, Tokushima-shi, Tokushima 771-0193, Japan TEL: +81-88-665-1516 FAX: +81-88-637-1099

Naruto Factory



The Naruto Factory opened in 1950 as the company's first production site. It started with the manufacture of inorganic chemicals, polymerization initiators, and other chemicals.

Main Production Lines:

Inorganic salts Organic intermediates

615 Aza-Hanamen, Satoura, Satoura-cho, Naruto-shi, Tokushima 772-8601, Japan TEL: +81-88-684-2266 FAX: +81-88-684-2359



Matsushige Factory



The Matsushige Factory was established in 2000 and started to manufacture pharmaceutical intermediates. The following year it began production of the functional plastic compounds POTICON and WHISTATT. It is the company's most advanced production site.

Main Production Lines:

POTICON (Functional composite material)
GCLE derivative (pharmaceutical intermediate)

139-40 Aza-toyohisakaitaku, Toyohisa, Matsushige-cho, Itano-gun, Tokushima 771-0213, Japan TEL: +81-88-699-7980 FAX: +81-88-699-7965



Anzen Dojo (Safety Training Center)

Located in the Tokushima Factory, the Anzen Dojo not only imparts safety knowledge through classroom learning, but also aims to improve the hazard awareness of all participants, through hazard experience training. In 2014, this program was recognized by the Japan Chemical Industry Association's 8th Responsible Care Awards.









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Quality Assurance Initiatives

The products of Otsuka Chemical are used in various applications in a variety of fields including pharmaceuticals, food products, automobiles, electronics, and housing. By ascertaining individual customer needs as well as the needs of each industry, the company is creating products that satisfy customers based on stringent quality control.

The entire company, with the exception of some departments, has obtained ISO 9001 quality management system certification. Meanwhile, the company's affiliated entities based in Japan and abroad have obtained certifications such as ISO 9001 and IATF 16949 (a standard for automotive quality management systems), creating an excellently coordinated production and quality assurance system on a global scale.

In Japan, three business units have been working to promote environmental management activities in collaboration with other group companies under the initiative of Otsuka Holdings

Co., Ltd. and have obtained ISO 14001 certification for the group's integrated environmental management system. (To be obtained in 2020)

With a corporate philosophy of trust, Otsuka Chemical is working to continually enhance not just product quality, but also the quality of its people, systems, and work in order to continue providing customers with reliable products. In this way, the company is improving its quality assurance level and the performance of the company as a whole, as well as the value and quality of its products and services, aiming to pursue sustainable growth.



Reducing CO₂ emissions by switching fuels and consolidating equipment

Business sites belonging to Otsuka Group companies operating in the Imagire area of Tokushika City (Otsuka Pharmaceutical's Tokushika Factory and Second Tokushima Factory, Taiho Pharmaceutical's Tokushima Plant) have all done major overhauls to their fuel oil boiler systems. Otsuka Chemical's Tokushima Factory installed 17 small throughflow boilers that run on natural gas (municipal gas), which operate to meet each site's changing production demands. Since January 2009 it has been supplying steam to all sites.

This change was successful in the reduction of annual CO_2 emission

Otsuka Group Tokushika Factories' **Otsuka Chemica** Steam Supply System Taiho Pharmaceutica Otsuka Pharmaceutic oy Otsuka Chemica Tokushima Factory steam supplied [100%] Otsuka Foods Tokushima Factory Otsuka Pharmaceutical Second Tokushima Factory steam supplied by Otsuka Chemica [100%] by Otsuka Chemic [100%]

generated during steam production by about 700 tons for Otsuka Pharmaceutical's two factories and about 2,200 tons for Taiho Pharmaceutical's Tokushima Factory

Diversity **Employee Education Employee Welfare**

Diversity Promotion and Enhanced Employee Education

Otsuka Chemical is creating supportive workplace environments for all its employees through initiatives for diversity promotion, human resources education and employee welfare.



Diversity Promotion

Otsuka Chemical has established a Diversity Committee as part of its management strategy. The committee aims to improve organizational performance by taking steps to enhance the diversity of human resources, to allow all individuals to demonstrate their

abilities, and to generate knowledge synergy. While also aiming to ensure that Otsuka Chemical is an attractive place to work and a company trusted by society, the company is carrying out diversity promotion measures according to the following three company policies, implementing both initiatives, physical and non-physical, including work-life balance initiatives, introducing a remote work system, encouraging employees to take childcare leave, and organizing social events for young employees.

- 1. Creating a company where motivated and capable employees want to keep working.
- 2. Training human resources that can respond to national, cultural, and gender diversity.
- 3. Localizing global developments (glocalization).



Otsuka Group diversity promotion personnel meeting

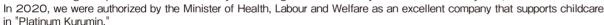


Promoting Women's Participation

Otsuka Holdings of the Otsuka Group is a signatory of WEPs (Women's Empowerment Principles), corporate action principles for companies that actively promote women's participation, which were jointly developed by the UN Global Compact and UN Women. In March 2019, Otsuka Chemical received L-star (Eruboshi) certification (three stars) based on the Act on Promotion of Women's Participation and Advancement in the Workplace.

Work-life Balance

Otsuka Chemical has enhanced a work system that supports balancing of nursing care/childcare and work. For example, a short-time work system for childcare and a staggered work shift for childcare are available until an employee's child finishes the 3rd grade of elementary school. A short-time work system for nursing care and a staggered work shift for nursing care are available for a year per applicable family member. We are also striving to improve work-life balance by introducing No Overwork Day and a remote work system, etc.



Global Exchange Program for Human Resources

Since 2014, the Otsuka Group has run the Global Exchange Program to find and train human resources who contribute to the Group's globalization, and as one aspect of its activities to promote

diversity. Currently Otsuka Chemical accepts employees from overseas subsidiaries for around two weeks, and conducts training programs to improve their understanding of the Otsuka Group and Japan. Although plans were interrupted in 2020 by the impact of the COVID-19 pandemic, once it becomes possible to continue these activities the next step will be for Otsuka Chemical employees to participate in parallel training programs at overseas subsidiaries.



Workplace Childcare

Employee Welfare

The Otsuka Group has in-office nurseries in Tokushima, Osaka, and Tsukuba. The Tokushima center had a capacity of 100 at the time of its opening in 2011, but this increased to 150 by 2014 and

210 by 2018, making it one of the largest in-office nurseries in the country. We are supporting the diverse lifestyles of our employees as well as establishing an environment where they can keep working with peace of mind.





The Otsuka Group has four guesthouse facilities operated directly by the group as retreats to support the health of employees. There are five more such facilities under contract to the Otsuka Pharmaceutical Health Association and the Otsuka Pharmaceutical Group Pension Fund.



Otsuka Shiosaiso (Tokushima)









Otsuka Amagisanso (Shizuoka) Tsurugisanso (Tokushima)

Initiatives for Human Resources Development



Project Management Training

Otsuka Chemical provides opportunities for training and practice to ensure that employees steadily learn new things and make substantial gains through experience. Based on this belief, the company promotes human resources development using on-the-iob training. Young employees are often included as members of major projects, regardless of their job title, and actively selected and promoted to positions of responsibility. This approach has not changed over the years, and the company remains focused on systematic human resources development at a time when there is an urgent need for global management due to the rapid social, economic, and industrial changes in recent years.

Training and Education System (Grade-Specific Training)

Along with grade-specific training when employees join the company and at the time of promotion to section chief, assistant manager, and manager, the company provides follow-up training two years after joining the company (for

those hired directly from high school, university, etc.) and ample step-up training every four to five years. The aim is for younger employees to experience steady growth. In addition to cross-cultural and foreign language training for employees to be posted outside Japan, the company also provides employees to be assigned overseas with cross-cultural, foreign language, and other necessary training. In addition, the company provides training for selected employees, including training of next-generation leaders, and sends executives and next-generation human resources to courses at external educational institutions so that they can gain a systematic grounding in business administration.



Training session

MBA Support

Otsuka Chemical invites interested employees to apply for company support for tuition toward an MBA with the aim of fostering future managerial and other human resources who are ready for the global stage. In addition to performing their jobs and studying at the same time, most of the teaching is in English, so the experience is quite demanding for the participants both physically and mentally, but they report improved abilities in advanced business administration as well as better English skills and helpful networking with other motivated participants. The employees get a lot out of the program and it is definitely worth the effort.



MBA earned in March 2022



Self-Development Support

Otsuka Chemical has programs to enhance motivation and the desire to learn in employees, such as a language certification reward program and a self-development grant system, which pays half the cost of eligible courses. The company has also implemented the Computerized Assessment System for English Communication (CASEC) and free e-learning courses. This has created an environment where employees have access to a wide range of study opportunities.

On the other hand, every month, the company holds an online self-development seminar themed on various topics by inviting an internal or external lecturer. Any employee can participate in this seminar.



Social Contribution and Communication

Otsuka Chemical strives to enrich people's lives through cultural, educational, and other social contributions.

Otsuka Chemical not only conducts R&D to create better products, but also undertakes social contribution initiatives to enrich people's lives. The company is deeply committed to its various efforts to make a difference in the world. The company is deeply committed to its various efforts to make a difference in the world.



Participating in the Awa-odori Festival: Otsuka Hatsuratsu Ren dance team

The Awa-odori Festival in Tokushima is one of Japan's three main Bon-odori dance festivals and is an important event for the local community. Otsuka Chemical's dance team has participated in the event since 1963, and the group changed its name from "Otsuka Chemical Ren" to "Otsuka Hatsuratsu Ren" in 1988. Employees and their families participate in the event every August.







Otsuka Hatsuratsu Ren performing the Awa Dance



Support for Education in Schools

Every year, Otsuka Chemical continues to take part in the "Adopt an Eco-School" program, an alliance among business, government and academia in Tokushima Prefecture. The company does this in partnership with two other Otsuka Group companies, Taiho Pharmaceutical and Otsuka Pharmaceutical. The program supports opportunities to make environmental education part of the lessons at local schools. Students participate in water quality surveys in their own communities and tours of Otsuka Group facilities to see environmental initiatives, both of which help to deepen their interest in environmental conservation.







Tour of a tomato sorting and packing plant

Water quality survey by high school students



Volunteer Community Cleanups

Many employees and their families participate in community cleanup activities around the company's business sites.







Working around a business site

CSR Activities

The Otsuka Group decided to issue a CSR report from 2012 as one report of the Group. The CSR activities of Otsuka Chemical have been reported in the Otsuka Group Integrated Report since 2017. That is, it reports on the strengths of the group and initiatives to accomplish the group's goals.

Otsuka Group CSR website: https://www.otsuka.com/jp/csr/hd activity Integrated reports: https://www.otsuka.com/ip/ir/library/annual.html







https://o-museum.or.jp/publics/translation/en/



Otsuka Museum of Art

The Otsuka Museum of Art, the world's first museum exhibiting masternieces reproduced on ceramic panels was opened in Naruto Tokushima in Japan, on the 75th anniversary of the founding of the Otsuka Group. The museum displays reproductions of many masterpieces, from ancient murals to modern works, from more than 190 museums in 26 countries. Rendered using special technology developed by Otsuka Ohmi Ceramics Co., Ltd., an Otsuka Group company, more than 1,000 pieces of art have been reproduced in original size and are exhibited in semi-permanent form without reducing the works'artistic value. The museum building is built into the mountainside in order to protect Naruto's beautiful environment and scenery. The permanent exhibitions in three underground levels and two aboveground floors are divided in the three categories of "The Environment," Lineages and a thematic section to enable visitors to understand the works in deeper and more enjoyable ways.

The museum also holds a diverse range of events to help visitors become more familiar with art. In 2020, a full-sized ceramic panel reproduction of Leonardo da Vinci's Lady with an Erminea valuable Polish cultural propertywas added to the museum's list of exhibits. Lady with an Ermine is the second of four portraits by Leonardo using female models. The museum employed its ingenuity to display the work alongside the Mona Lisa, enabling visitors to view and compare two of Leonardo's rare portraits of women.Leonardo using female models. The museum employed its ingenuity to display the work alongside the Mona Lisa, enabling visitors to view and compare two of Leonardo's rare portraits of women.



Tokushima Vortis

The Tokushima Vortis professional soccer team was formed in 2004 to help to revitalize the local region, based on a core group of players from the Otsuka Pharmaceutical soccer club. In 2019, Mima City, Otsuka Pharmaceutical, and Tokushima Vortis started the Program for Health Promotion (*SIB Project). In 2020, the project was awarded the J League Challenge! Awards public prize. In 2021, Mima City was granted an award under the Japan Sports Agency's program to commend local governments that excel in sports initiatives and healthy community development. The company will continue activities to develop local communities and solve local issues. The first team played in the J1 league in the 2021 season. Unfortunately, it is playing in the J2 league in the 2022 season. The team is struggling to return to the J1 league in one year. Moving forward, the company will focus more efforts on local contribution activities.

*SIB: Social impact bond. A scheme for setting up projects to solve social issues using private funds and for a local government to pay consideration according to the outcomes.



http://www.vortis.jp/ (in Japanese only)







Otsuka Chemical Co., Ltd.

3-2-27 Ote-Dori, Chuo-Ku, Osaka 540-0021, Japan TEL: +81-6-6943-7701 FAX: +81-6-6946-0860 Head Office

Tokyo Headquarters 2-2 Kanda-Tsukasamachi, Chiyoda-ku, Tokyo 101-0048, Japan TEL: +81-3-5297-2727 FAX: +81-3-5297-2777

Sakuradori Toyota Bldg. 13F, 4-5-28 Meieki, Nakamura-ku, Nagoya 450-0002, Japan TEL: +81-52-571-5526 FAX: +81-52-571-5527 Chubu District

https://www.otsukac.co.jp/en/

