Kao Group **Chemical Business**

Growth Strategy Briefing

June 22, 2023

Masahiro Katayose
Senior Executive Officer, President, Chemical Business, Global
Kao Corporation

These presentation materials are available on our website in PDF format:

www.kao.com/global/en/investor-relations/library/business-strategy-presentations/

Forward-looking statements such as earnings forecasts and other projections contained in this release are based on information available at this time and assumptions that management believes to be reasonable, and do not constitute guarantees of future performance. Actual results may differ materially from those expectations due to various factors.

1. Chemical Business Overview

2. Growth Strategy

3. Specific Actions

1. Chemical Business Overview

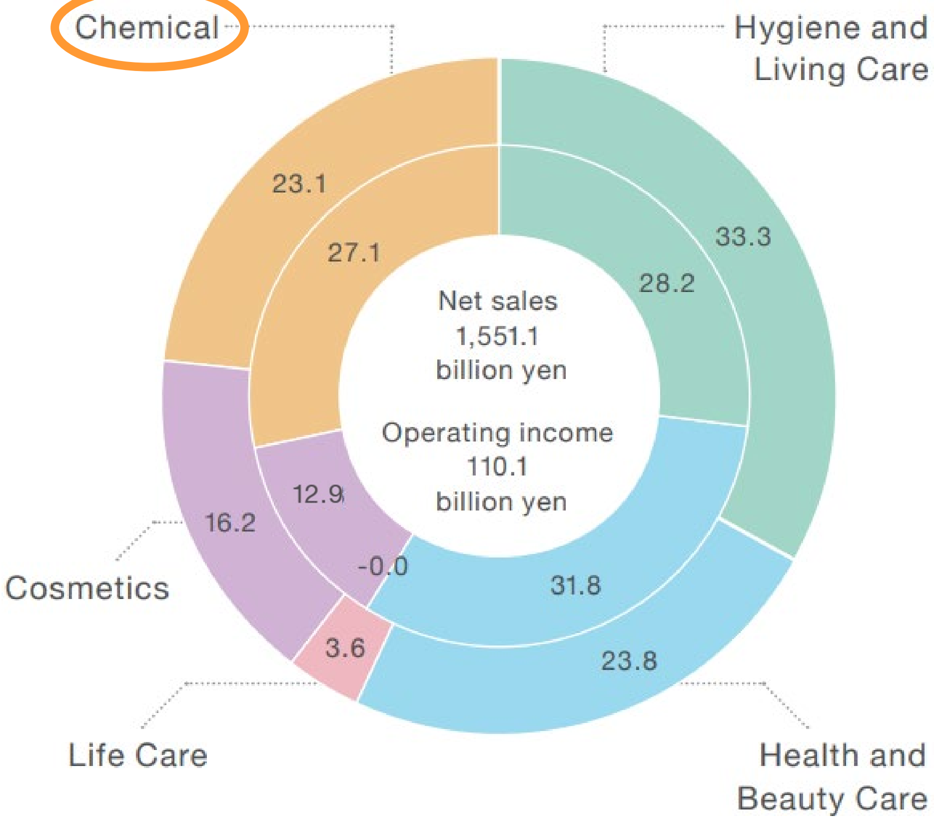
2. Growth Strategy

3. Specific Actions

Positioning of the Chemical Business within the Kao Group

FY2022 Shares of net sales and operating income by business segment

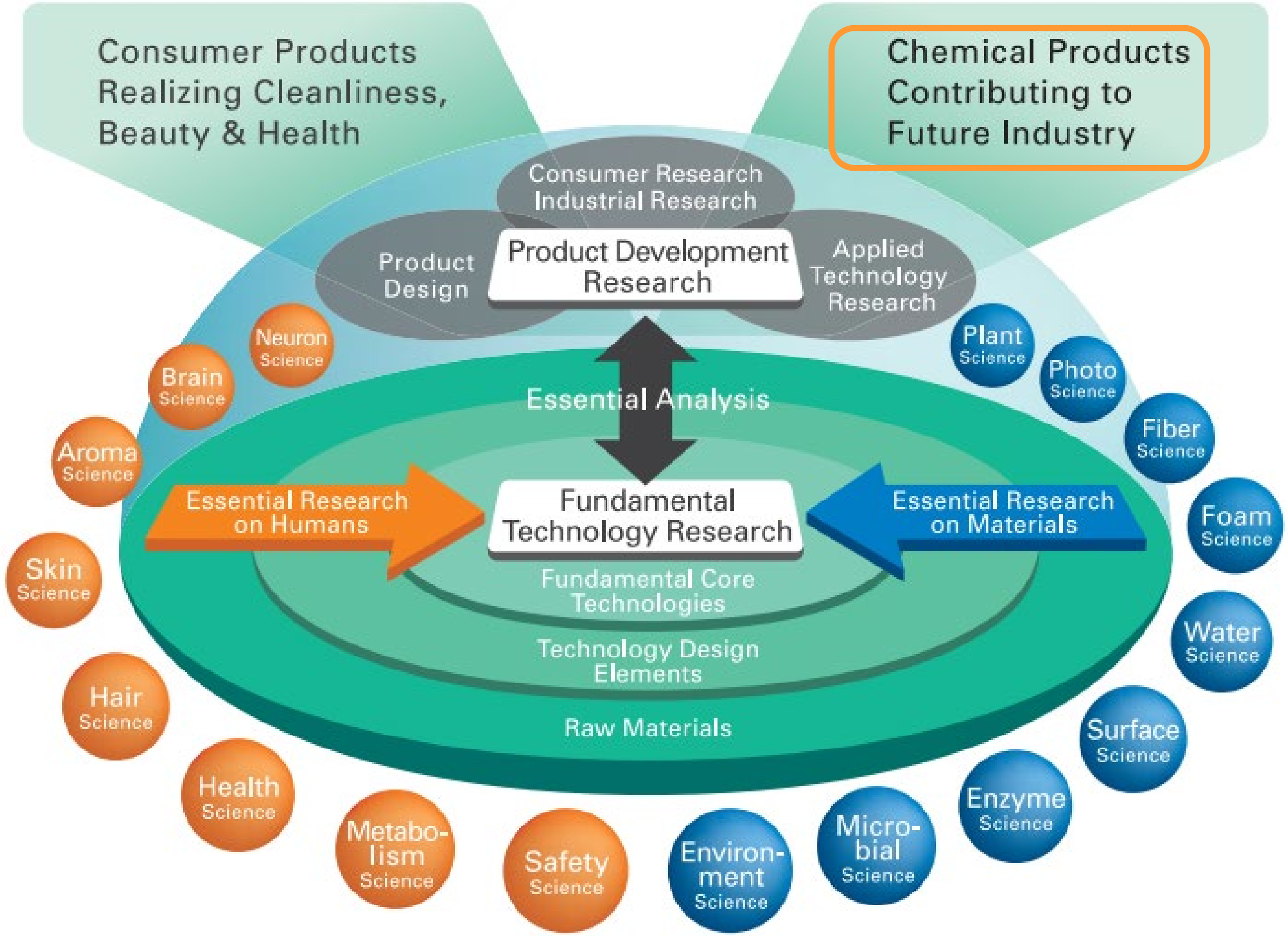
Outside: Net sales composition ratio (%)
Inside: Operating income composition ratio (%)



➤ Chemical Business: We offer a wide variety of industrial products globally while meeting the diverse needs of a broad range of industries. These products include chemicals made from natural fats and oils as well as surfactants, fat and oil derivatives, high functional polymers, fragrance that use oleo chemicals as ingredients.

Our Approach to Value Creation

We combine **fundamental technology research** and **product development research**.



Centering around our core technology, **precise interfacial control technology**, we combine a wide variety of technological assets to create unique products and services that grasp the needs of society, consumers and the industries.

Future Vision

Through the power of chemistry, we create a future of Kirei* for people, society and the planet.

Kirei for people

We offer people an enriched and sound life while being comfortable, clean and healthy.

Kirei for society

Allows industry to keep enriching the world through problem-solving.

Kirei for the planet

We contribute to maintaining the planet as a place for sustainable living.

The Clear Choice

We provide value indispensable for *creating the future of industry* and a *sustainable society*.

Value Creation

We strive to solve environmental and social issues through co-creation by integrating Kao's various strengths with those of its customers and partners. In this way, we help create new value in the industry and realize social impact.

We contribute to initiatives for customers, industries and society to make a shift toward decarbonization and a circular economy by refining our eco-chemical products and offering new eco-chemical solutions.

* Kirei: *The Japanese word* kirei *describes something that is clean, well-ordered, and beautiful all at once. For Kao, this concept of* Kirei *not only describes appearance, but also attitude—a desire to create beauty for oneself, for other people, and for the natural world around us. At Kao,* Kirei *is the value we want to bring to everyday life through our brands, products, technologies, solutions, and services—now and in the future.*

Industrial Fields Covered by Our Chemical Business

Functional Polymers
- Polyamide resins
- Polyester resins
- Furan resins
- Phenol resins

Fat and Oil Derivatives
- Fatty acids
- Fatty alcohols
- Fatty amines
- Esters
- Glycerin

Surfactants
- Anionic surfactants
- Cationic surfactants
- Amphoteric surfactants
- Nonionic surfactants

Aroma Chemicals/ Enzymes
- Synthetic aroma chemicals
- Compounded flavors and fragrances

Metals Casting — Car, Beverage can, Machine tools
- **Metal cleaners**
- **Sulfur free casting binder**
- Rolling oil

Binder for molds
(Metals Foundy field)

Lubricants — Air conditioner (compressor oil), Engine oil
- Lubricant base oils
- Lubricant additives

Pulp Paper — Books, Newspaper, Copy paper
- De-inking agents
- Bulking agents
- Dispersants

Agrochemicals — Vegetables, Fruits, Activators
- **Adjuvants**
- Anti-caking agents for fertilizers

Adjuvants
(Agrochemicals field)

Pharmaceuticals — Disinfectant, Tablet, Ointment
- Disinfectants
- Solubilizers
- Emulsifiers
- Moistening agents
- Base chemicals for ointments

Raw materials for ointments
(Pharmaceuticals field)

Laundry detergents Toiletries Cosmetics
- Laundry detergent chemicals
- Cosmetics chemicals

Aroma chemicals — Soap, Cosmetics
- Aroma chemicals
- Aroma compounds

Raw materials for fragrances
(Aroma chemicals field)

Food products — Breads, Cakes, Snacks, Dairy products, Tofu
- Edible fats and oils (Shortening)
- Food emulsifiers
- Additives for Tofu

Foaming emulsified oil for baking cakes
(Food products field)

Precision industry Electronics — LCD panels, Hard disk drives, Spectacle lenses
- **Fluorocarbon alternative cleaners**
- Fine polishing agents
- Semiconductor chemicals

Polishing slurry for Hard Disk substrates
(Electronics field)

Information materials — Color copiers, Inkjet printers
- **Low energy fusing toner resins ／ Color toners**
- Printer inks

Toners for copiers and printers
(Information materials field)

Polyurethane — Shoes, Refrigerators(insulator)
- **CFC-free blowing catalysts**
- Catalysts and polyesterpolyol

Plastics Rubber — Plastic products, Tires
- Additives for emulsion polymerization
- Plasticizers for PVC
- Anti-static agents
- Rubber processing agents
- Modified PLA

Construction — Buildings, Bridges, Roads, Concrete piles
- Concrete additives
- Asphalt emulsifiers
- Asphalt modifiers
- **Concrete thickeners for water pollution mitigation**

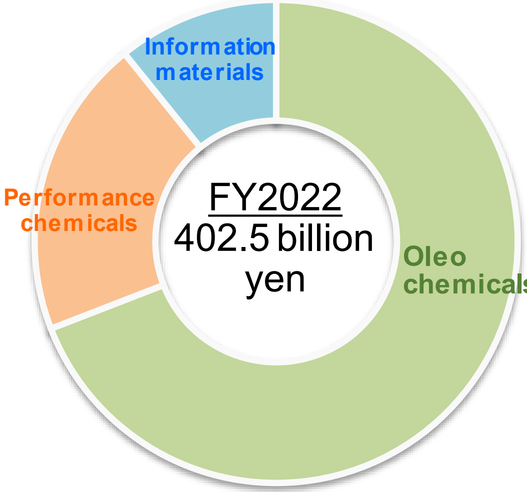
Air entraining superplasticizers for concretes
(Construction field)

Paints and Inks — Printing inks, Paints
- **Binder for non-toluene type ink**
- Dispersants

Business Structure

	Major examples of products and their applications	Main destinations	Market competitiveness	Strengths as the core of the operation
Oleo chemical business We ensure stable supply of fat and oil products. 	**Fatty alcohols** Laundry detergents Shampoos, toothpastes Plastic products **Tertiary amines** Disinfectants, Dishwashing detergents Personal care products **Surfactants** **Aroma chemicals and Compounds** **Food emulsifiers**	Kao and other consumer products* manufacturers Chemical industry in general Fragrance manufacturers Processed food manufacturers	Global market 1st place Fatty alcohols Tertiary amines	Technology ・Catalyst / Process technology ・Organic synthesis technology Global supply system Wide range of applicability of oleo chemical components (including use in consumer products)
Performance chemical business We create various types of capabilities using interface science. 	Water reducing admixtures for concrete Chemicals for plastics Antistatic agents, Emulsion polymerization agents Foundry sand binders Iron and steel cleaning agents	Construction material manufacturers Plastic product manufacturers Casting manufacturers Iron and steel manufacturers	Asian market 1st place Surfactants	Technology ・Emulsification and dispersion technology ・Surface modification technology Global operation sites Use of in-house chemicals
Information material business We offer the next-generation value by working closely with customers. 	Toners Toner binders Inkjet colorants and inks Hard disk chemicals Semiconductor chemicals	Copier and printer manufacturers Electronic component manufacturers Semiconductors manufacturer	Global market 1st place Toner binders Hard disk chemicals	Technology ・Polymer molecule design technology ・Nano pigment dispersion technology ・Interface control technology Analysis and evaluation capabilities Global supply system

Sales breakdown by business



* Consumer products: Household and personal care products and cosmetics

Example of Major Materials and Products

In the leading group worldwide

Fat and oil derivatives	●Natural fatty alcohols ●Tertiary amines
Detergents & Cosmetics	●Surfactants for fabric softeners
Surfactants	●Sulfate type anionic surfactants
Fragrance	●Aroma chemicals (HCA[1], MDJ[2], lactones, etc.)
Digital printing materials	●Toner binders
Semiconductors & Electronics	●Hard disk polishing agents/cleaners ●Cleaning agents for semiconductor back-end processes

1. HCA: Hexyl Cinnamic Aldehyde 2. MDJ: Methyl Dihydro Jasmonate

In the leading group within Japan

Plastics & Rubbers	●Silica dispersants for fuel-efficient tires
Agrochemicals	●Adjuvants for agrochemicals
Food products	●Additives for tofu ●Emulsifier for confectionery
Casting	●Furan binder for casting
Metals	●Metal cleaners
Asphalt, Civil engineering & Construction	●High-range water reducing admixtures for concrete products

One in two color copies

One in three hard disks

One in two green tires

One in four of tofu

90% of poles
60% of pipework

Contribution to reduced use of agrochemicals

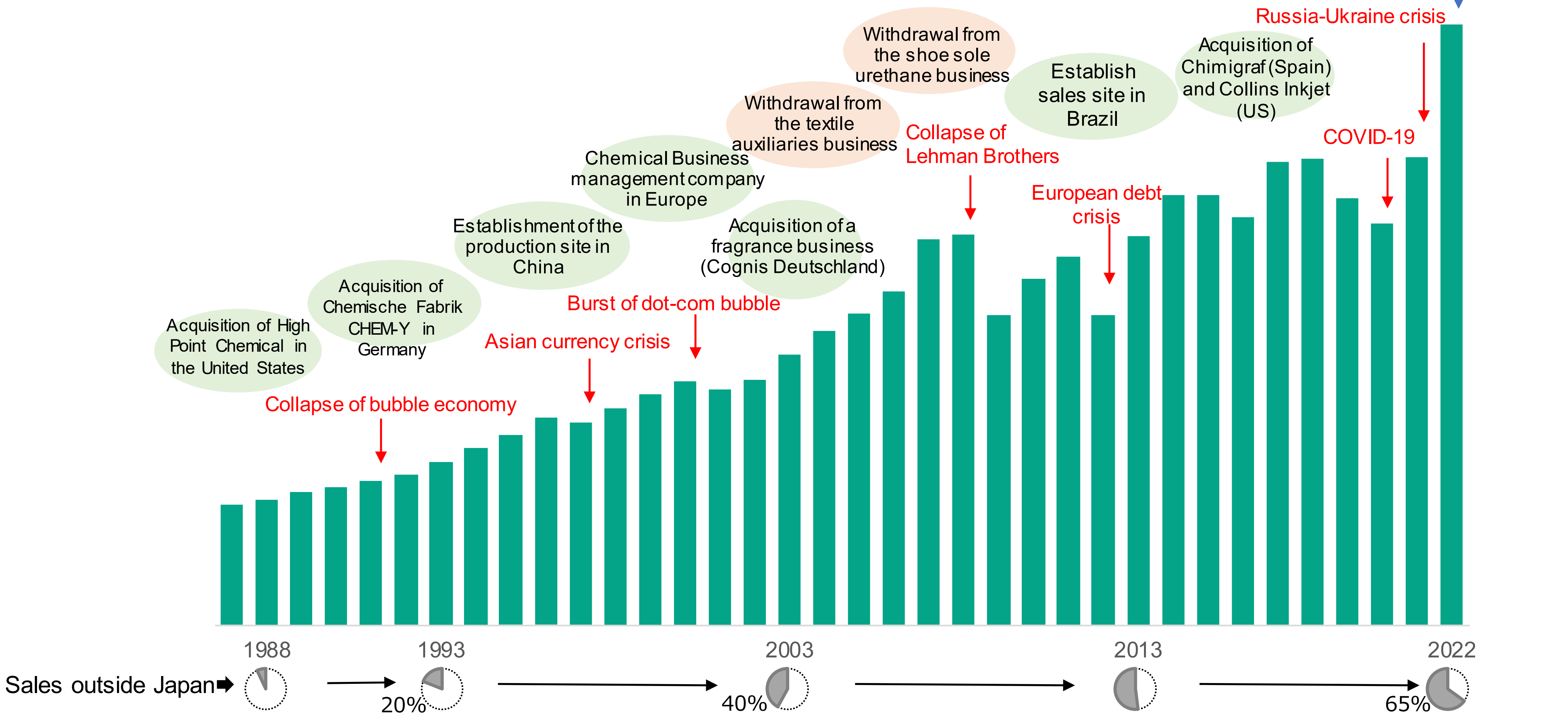
Indispensable for skyscrapers

(Source: Kao survey)

Growth History

FY2022 results

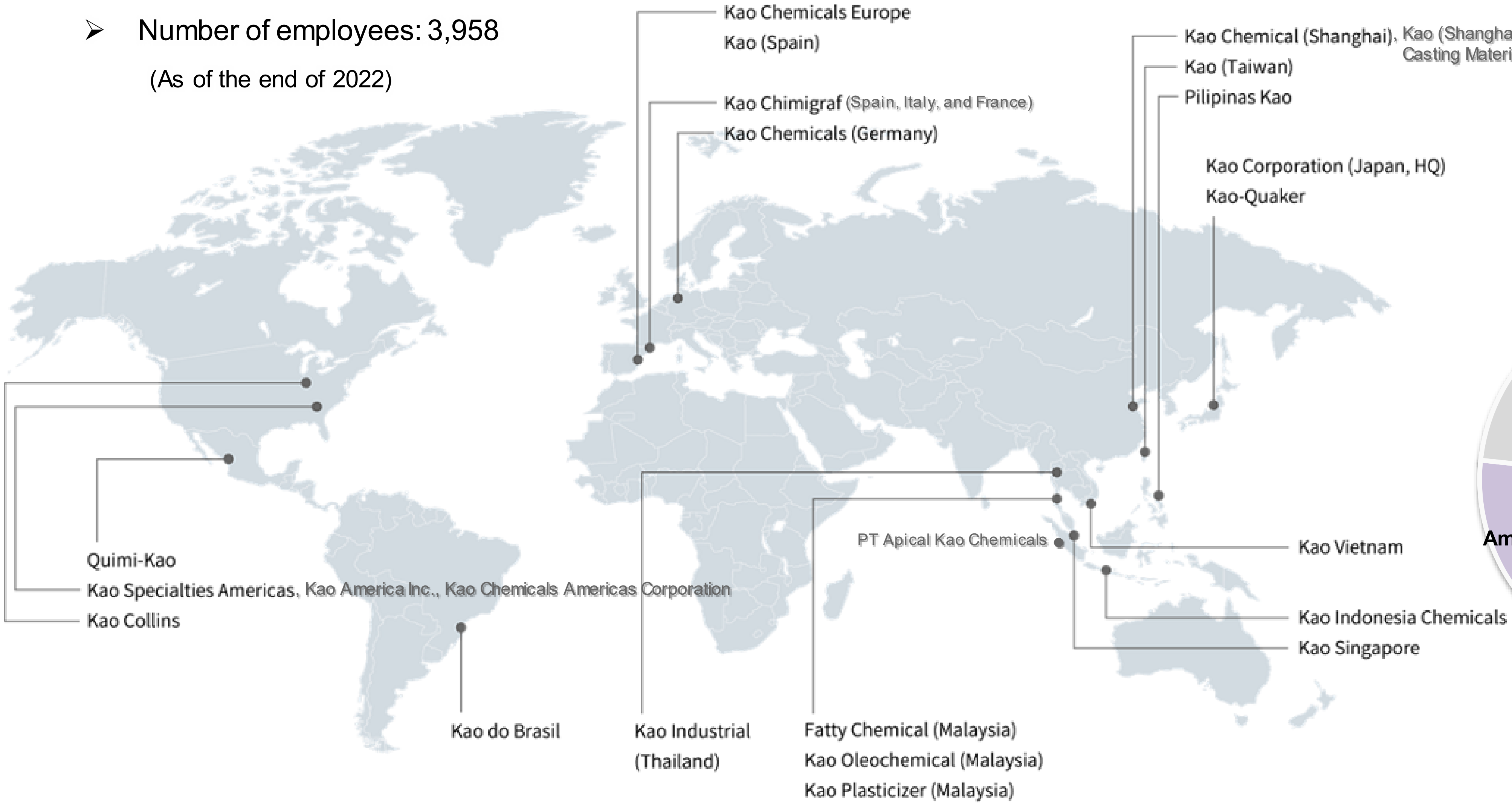
Net sales	Operating income	Ratio of net sales outside Japan
402.5 billion yen	29.5 billion yen	65%



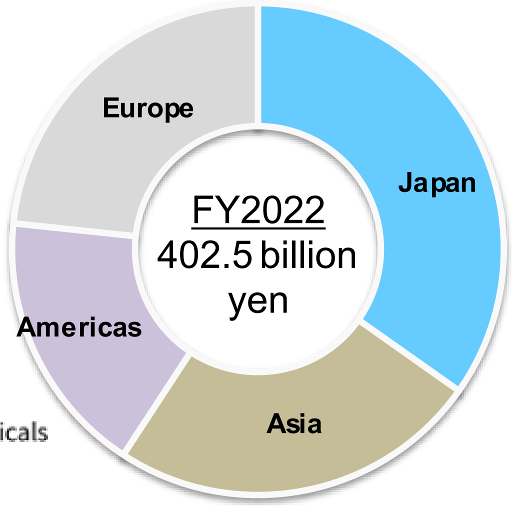
Global Chemical Business Bases

- Subsidiaries outside Japan: 26
- Number of employees: 3,958

(As of the end of 2022)



Sales by region



1. Chemical Business Overview

2. Growth Strategy

3. Specific Actions

Strengths and Strategy of the Kao Chemical Business

Kao's strengths

◆Niche product groups developed with unique technology that generate added value, and market leading products with high market share

◆Ability to deploy business solutions in a wide range of industrial fields, and business foundation that enables global growth

◆Synergy with the Consumer Products Business

* Maximum use of research assets (fundamental technology in particular)
* Sharing of production equipment, raw materials, and sites
* Sharing of technology and knowledge between the two businesses
  - Technology and knowledge reinforced through transactions with customers in the industry are utilized in the Consumer Products Business
  - Technology and knowledge accumulated in the Consumer Products Business are utilized in the Chemical Business

Business Strategy

- **Strengthen our foundation for growth** and accelerate **business expansion into new areas**.
- **Proactively develop solutions and materials with high environmental value and social value**.
- Strengthen and accelerate business development through **M&A and external collaboration and cooperation**.
- **Accelerate global growth** by business expansion in **major markets** including AEMEA (the Americas, Europe, the Middle East and Africa) and China and creating a business foundation in **emerging countries**.
- Innovate business and reinforce customer touchpoints/communication by actively adopting digital technologies.

Social Issues that We Place Importance on

Progress of climate change and loss of biodiversity
Addressing environmental issues and decarbonization needs

Pandemics and infectious diseases in livestock
Addressing growing societal needs for hygiene

Heightened interest in agricultural issues (e.g., increase in food production, reduced agrochemical use, improvement of energy efficiency)
Addressing issues surrounding agriculture

Aging of infrastructure in developed nations and urbanization of emerging nations
Improvement of infrastructure durability as well as working environment of construction and production

Upgrading and expansion of use of digital technology
Responses to processing and material advancement

Mid-term Plan 2025 "K25": Growth Strategy

We will grow our business by solving environmental and social issues.

Value creation

- Solution
- Products
- Materials

Profit-making stage

Focus on strengths

Fundamental businesses

- ◆**Fat and oil derivatives**
  Alcohol, Tertiary amines, Raw materials for consumer products[1]
- ◆**Specialty chemicals**
  Fragrances, Toners, Toner binders, Electronic materials
- ◆**Process chemicals**
  Basic infrastructure (Civil engineering & Construction), Lubricants, Resins, Iron and Steel, Cast metals

Next profit-making

Expand business

Strategic businesses

- ◆ **Hygiene (disinfection, washing)**
- ◆ **Agrochemicals**
- ◆ **Roads and mobility**
- ◆ **Digital solutions**[2]

New stage

Grow business

New businesses

- ◆**New performance chemicals**
  Hydrophobic-modified CNF[3] compound, etc.
- ◆**Biotechnology products**

Direction of business

- **Enhancement of the value chain**
  Differentiation using environmental impact reducing technology
- **Value co-creation (strengthening of partnerships)**
  Strengthening of solutions
- **Creation of new value centering around the core technology**

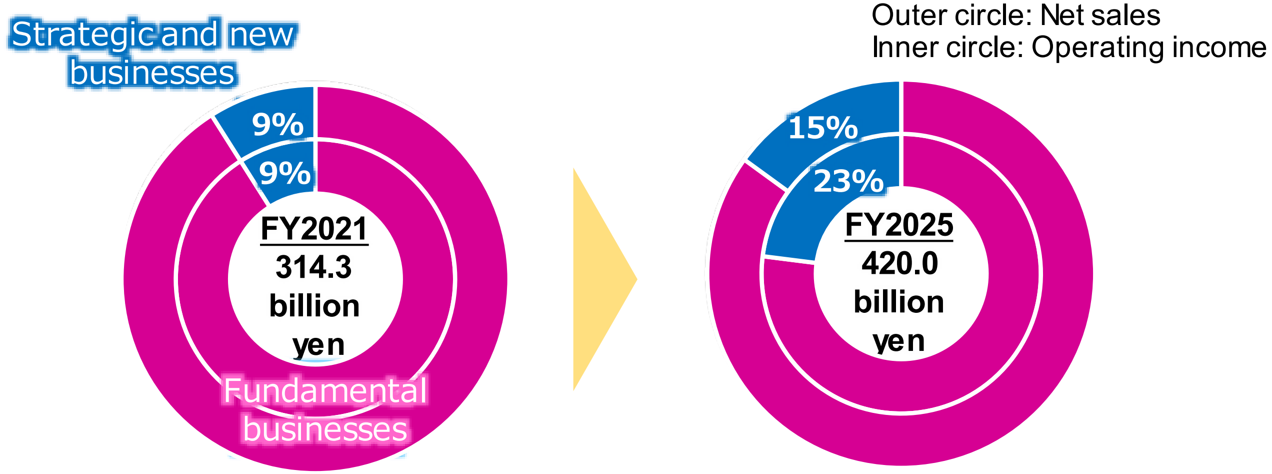
1. Consumer products: Household and personal care products and cosmetics
2. Digital solutions: Inkjet inks, Semiconductors, Electronics
3. CNF: Cellulose nanofiber

Mid-term Plan 2025 "K25": Numerical Targets

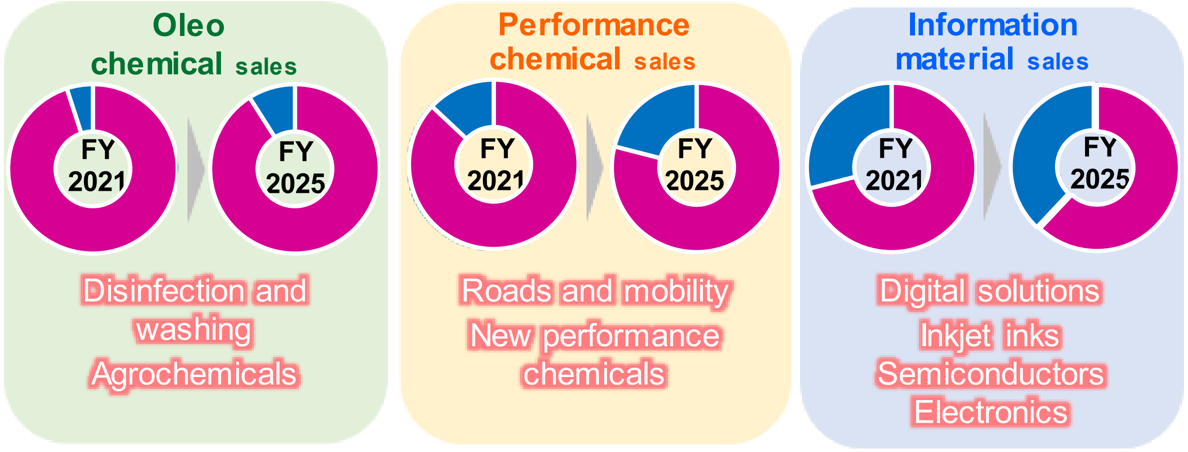
* Excluding M&A

	FY2021 result	FY2022 result	FY2025 plan/target
Net sales	**314.3 billion yen**	**402.5 billion yen**	plan **420 billion yen**
Sales outside Japan against total net sales	**61%**	**65%**	target **70%**
Strategic and new business sales against total net sales	**9%**	**9%**	target **15%**
Operating income	**29.6 billion yen**	**29.5 billion yen**	target **34.5 billion yen**
ROIC	**10%**	**9%**	target More than **10%**

We aim to increase profits by expanding strategic and new businesses.



Target operating margin of strategic and new businesses: 15%



Mid-term Plan 2025 "K25": Progress

	FY2020 results	FY2021 results First year of K25	FY2022 results Second year of K25	FY2025 Plan
Net sales	269.2 billion yen	314.3 billion yen	402.5 billion yen	420 billion yen
Sales outside Japan against total net sales	59%	61%	65%	70%
Operating income	27.7 billion yen 10.3%	29.6 billion yen 9.4%	29.5 billion yen 7.3%	34.5 billion yen 8.2%
EBITDA*	41.6 billion yen	44.4 billion yen	45.5 billion yen	52.5 billion yen
Reference: Prices of natural fats and oils (US$/MT)	751	1,240	1,460	1,150

*EBITDA=Operating income + Depreciation & Amortization

Achievements of K25, Second year (FY2022)

(1) Sales increased due in part to the contribution from selling price adjustments in line with raw material price hikes mainly for oleo chemicals outside Japan.

(2) Operating income was flat compared to the previous fiscal year, due in part to the impact of a write-down of inventory as a result of fluctuations in market conditions of natural fats and oils. (however, EBITDA increased.)

(3) Sales outside Japan increased firmly and we continue to develop products from a sustainability point of view.

Mid-term Plan 2025 "K25": Priority Initiatives

Factors that affect our business

Global economic trend

Fats and Oils and Petrochemicals market condition

Regulations on chemical substances

Priority initiative (1)
Establish a strong business foundation.

Priority initiative (2)
Steadily develop one-of-a-kind technologies.

Priority initiative (3)
Achieve global expansion of eco-chemical products.

We will shift to a resilient business structure that can minimize the impact of the economic environment and raw material fluctuations (shift to high-value added business structure).

1. Chemical Business Overview

2. Growth Strategy

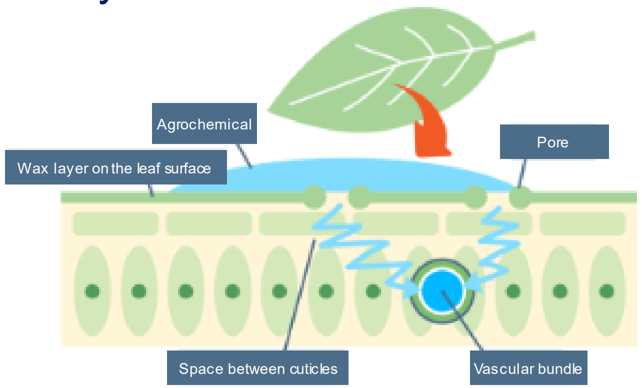
3. Specific Actions

Adjuvants to Contribute to Smart Agriculture and Environment Preservation

Priority initiative (2)
Steadily develop one-of-a-kind technologies.

Adjuvants

Chemicals that bring out the potential of agrochemicals such as increased permeation of active ingredients and improved wettability



Market

- ✓ **Market size:** (Adjuvants) **100 billion yen**
- ✓ **Growth rate: CAGR 6% or higher**
- ✓ Changes in farming policies in various countries (increase of food production, reduction of agrochemical use and fertilizers, saving labor and digitalization)
- ✓ Expanded disease and insect damage due to global warming and climate change

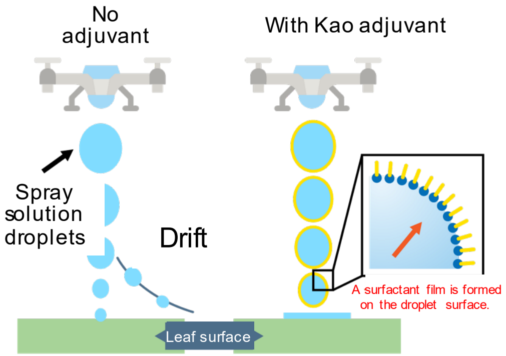
Strategy and strengths

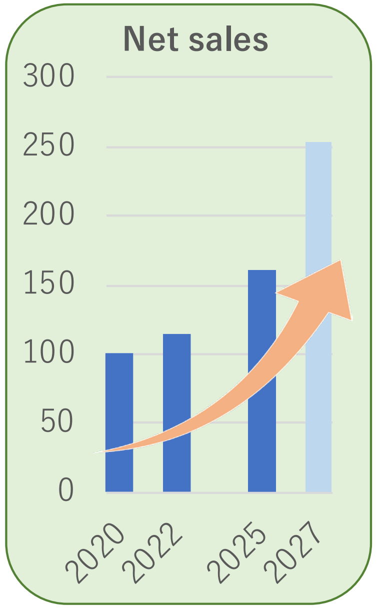
(1) As a pioneer in Japan in this field, accumulation of 50+ years of track record, technology and knowledge
(2) Use of precise interfacial control technology at a high level and development of characteristic products
(3) Use of the collaboration platform with an oil palm plantation

Initiatives

(1) **Development of products optimized for crop dusting using a drone**
(2) Collaboration and creation of a sales network outside Japan (China, ASEAN nations)
(3) Launch of business alliance with Polar Star Space to **establish a disease monitoring technology on oil palm farms**

Crop dusting using a drone





Sales image when 2020 sales are set to 100

Disease monitoring on oil palm farms

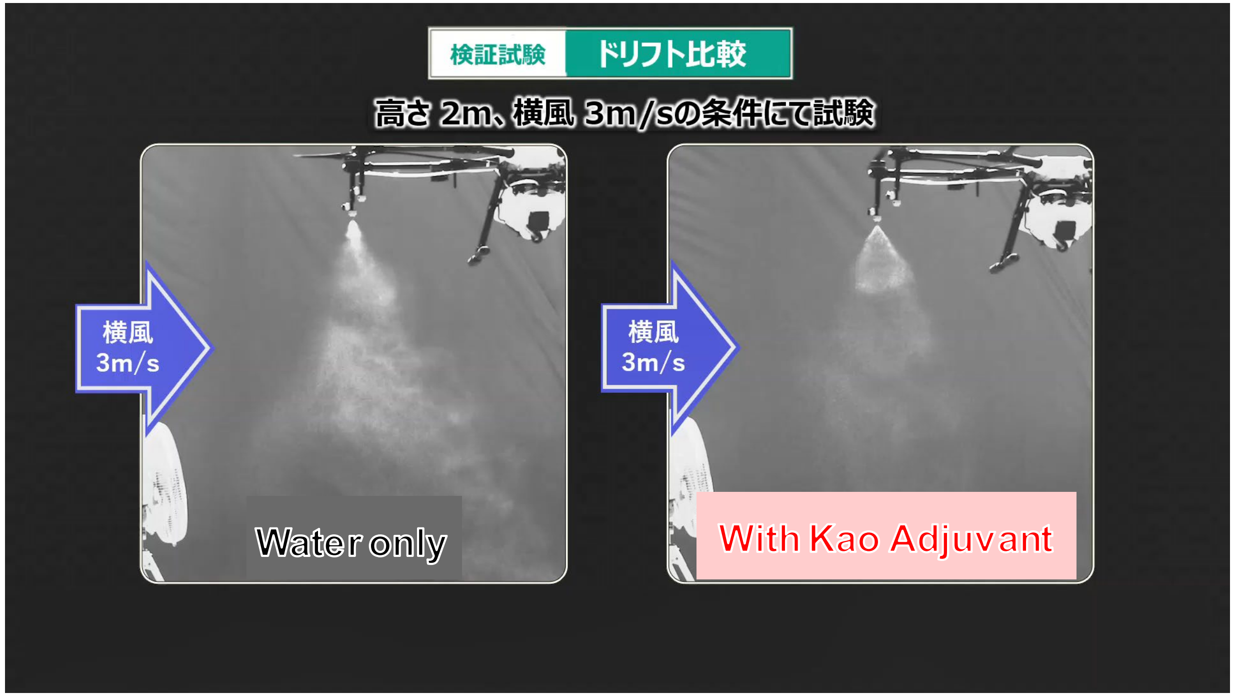
Occurrence of disease on oil palm farms

Withering after infection

Comparing the effects of adding Kao Adjuvant

Effect of restraining from vaporizing water

Effect of preventing chemicals from drifting by crosswind



↑↑
Vaporizing water
by crosswind

↑↑
Kao Adjuvant is restraining from
vaporizing water

↑↑
Drifting chemicals
by crosswind

↑↑
Effect of preventing
chemicals from drifting

Water droplet diminishes in size

Water droplet is maintained in size

Highly Durable Asphalt Modifier to Contribute to Adding Resilience to Infrastructure

Asphalt modifier made from waste PET

We **contribute** to creation of a **resource recycling society** by **realizing effective use of waste PET** and **highly durable paving** at the same time.

Market potential

- ✓ **Market size: 25 billion yen in Japan; 100 billion yen outside Japan**
- ✓ **Growth rate: CAGR 5%** (asphalt paving, global)

Strategy to create a market

(1) Stimulation of potential needs in the paving market (e.g., high durability, long life, environmental contribution)
(2) Building up of track record in Japan, expansion to public roads and entry to the market outside Japan
(3) Strategic roll out of promotional activities

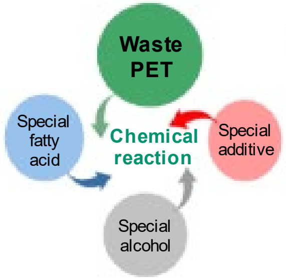
Strengths

(1) **Advanced application of polyester molecular design technology obtained in the toner business**
(2) Use of the foundation of the asphalt emulsion (fatty amines) business that has continued for over 50 years

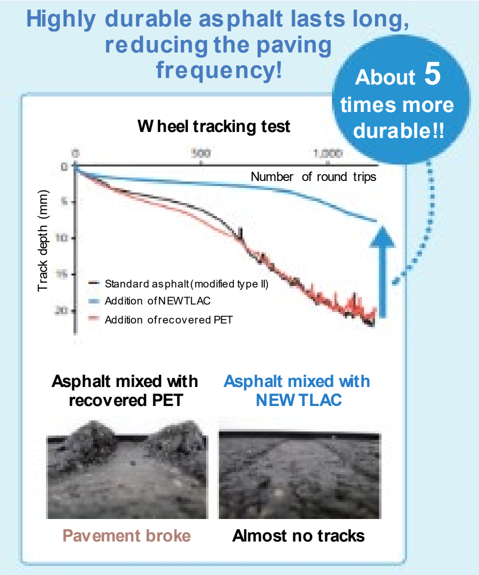
Initiatives

(1) **Collaboration with road construction companies, PET disposal manufacturers and retailers (Japan)**
(2) **Evaluation tests at a public institution and promotion of acquisition of a road qualification**
(3) Building up of track record outside Japan (the US, Thailand, Taiwan, etc.)
(4) **Use of low-grade waste PET**

Crushed waste PET

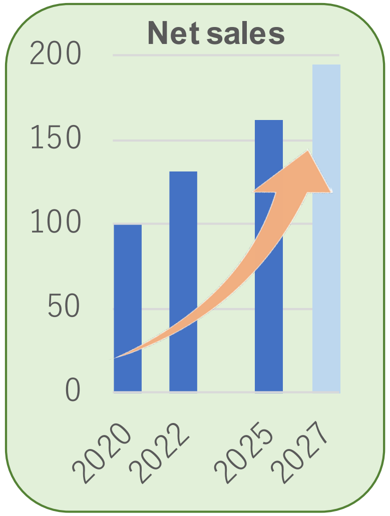


NEWTLAC 5000



Increase of track record in Japan

Promotional activities outside Japan



Sales image when 2020 sales are set to 100
(Including products other than the asphalt modifier)


Models of asphalt paving
With NEWTLAC 5000
Without NEWTLAC 5000
(general paving)

Solutions to Contribute to a Digital Society

Priority initiative (2)
Steadily develop one-of-a-kind technologies.

Inkjet Inks

Contribution to digitalization of analog printing and reduction of environmental impact in the printing industry

Market

- ✓ **Market size: 500 billion yen** (inkjet ink market)
- ✓ **Growth rate: CAGR 8%**

(Areas of commercial printing and label and package printing: CAGR 20%)

Strategy and strengths

(1) Focus on the areas of industrial printing and label and package printing

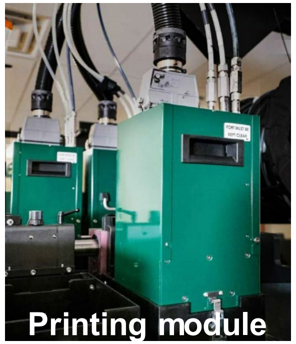
(2) Ability to develop high-reliability customized inks
Research and development covering everything from key material design to manufacturing process, ink formula, and reliability evaluation

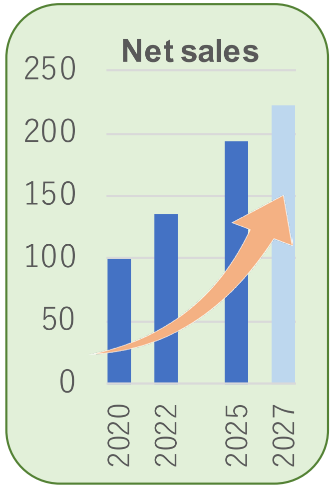
(3) Proposal of a total solution that takes into consideration the paper and film type, printing system, and post-printing process

Initiatives

(1) **Continuing to expand the product use in flagship devices of some of the top printer companies**

(2) **Enhancement of solutions** by creating printing modules through collaboration with partners





Sales image when 2020 sales are set to 100

Semiconductor chemicals

Realization of high washability and low environmental impact and contribution to improving semiconductor performance

Market

- ✓ **Market size: 350 billion yen**
(Chemicals for semiconductor market)
- ✓ **Growth rate: CAGR 8%**

Strategy and strengths

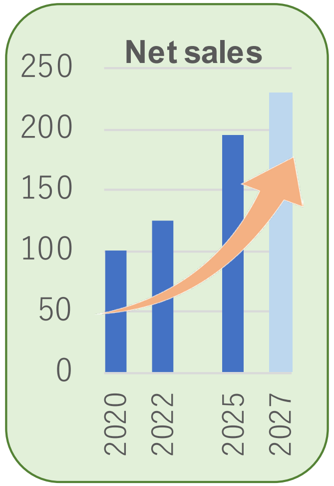
(1) Robust product portfolio
- Power semiconductor cleansers
- Etching agents for high-density/stacked 3D memory
- High-resolution dry film strippers, and so on

(2) New process introduction and testing service
Proposal of optimal product and cleaning process conditions using the Fine Cleaning Center in Wakayama Plant

Initiatives

(1) **Focus on developing one-of-a-kind chemicals indispensable for 5G / 6G communication standards**

(2) Promotion of industry standardization through collaboration with partners



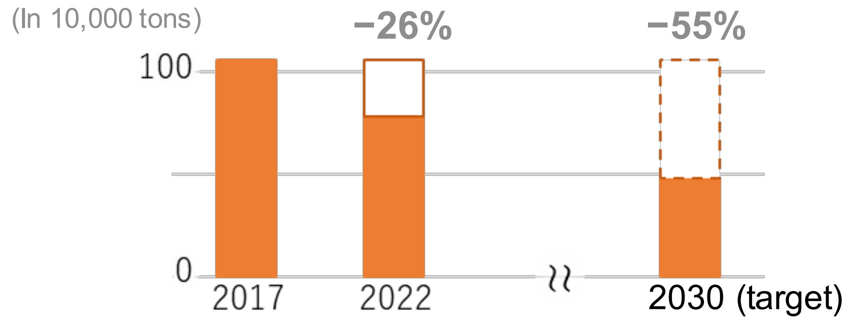
Sales image when 2020 sales are set to 100

Initiatives for Decarbonization

Priority initiative (3)
Achieve global expansion of eco-chemical products.

Reduction of the company's carbon footprint

We will reduce CO_2 emissions by 55% by 2030.
(Scopes 1 & 2; compared to the 2017 level)



[Specific actions]

(1) Use of low-carbon energy

- Shift to 100% electricity from renewable energy
- Solar power generation (in-house power generation)
- Increased use of biomass fuels
- Increased use of internal carbon pricing

(2) Improvement of production process efficiency

- Introduction of energy-saving processes
- Yield improvement

Implementation example related to the Chemical Business up to 2022

- RE100 (100% renewable energy) at four plants in China and Germany
- Introduction of solar power generation at existing sites including Thailand, Wakayama and so on.

Initiatives related to the Chemical Business to achieve the 2030 target

- Use of biomass fuels in Spain, Malaysia and the Philippines, etc.

Contribution to decarbonization of society

Use of eco-chemical products **contributes to reduction of CO_2 emissions across society.**

Ratio of eco-chemical products sales against all products: 72% in 2022 ⇨ 85% in 2030

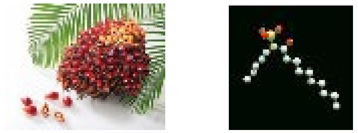
Low-carbon materials

- Use of biomass
- Recycled raw materials
- Production using biotechnology

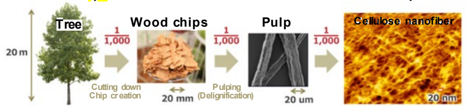
During product use by customers

- Saving of fuel costs, energy, and resources
- High durability and long life
- Process and productivity improvement

Bio IOS

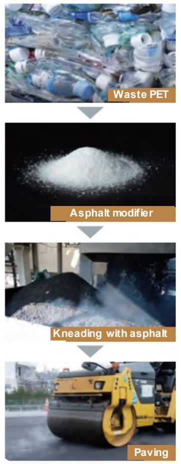


Hydrophobic-modified CNF* compound
(*CNF: Cellulose nanofiber)

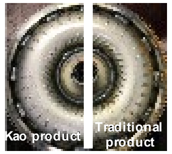


Use of cassava residue (biochemical material)

Asphalt modifier (use of waste PET)



Anti-rust cleansers for metal parts



Adjuvant

Chemicals for fuel-efficient tires

Low-temperature cleanser for iron and steel

Toners with low fusing temperatures

Kao

Kirei–Making Life Beautiful

Bringing New Value for Chemicals