

# Presentation on Functional chemicals

Aug. 30, 2022

[TSE 4401]



Current status of functional chemicals

**1. Overview of Functional chemicals**      ... P3

Future of functional chemicals

**2. Mid-term Management Plan ADX 2023**      ... P12

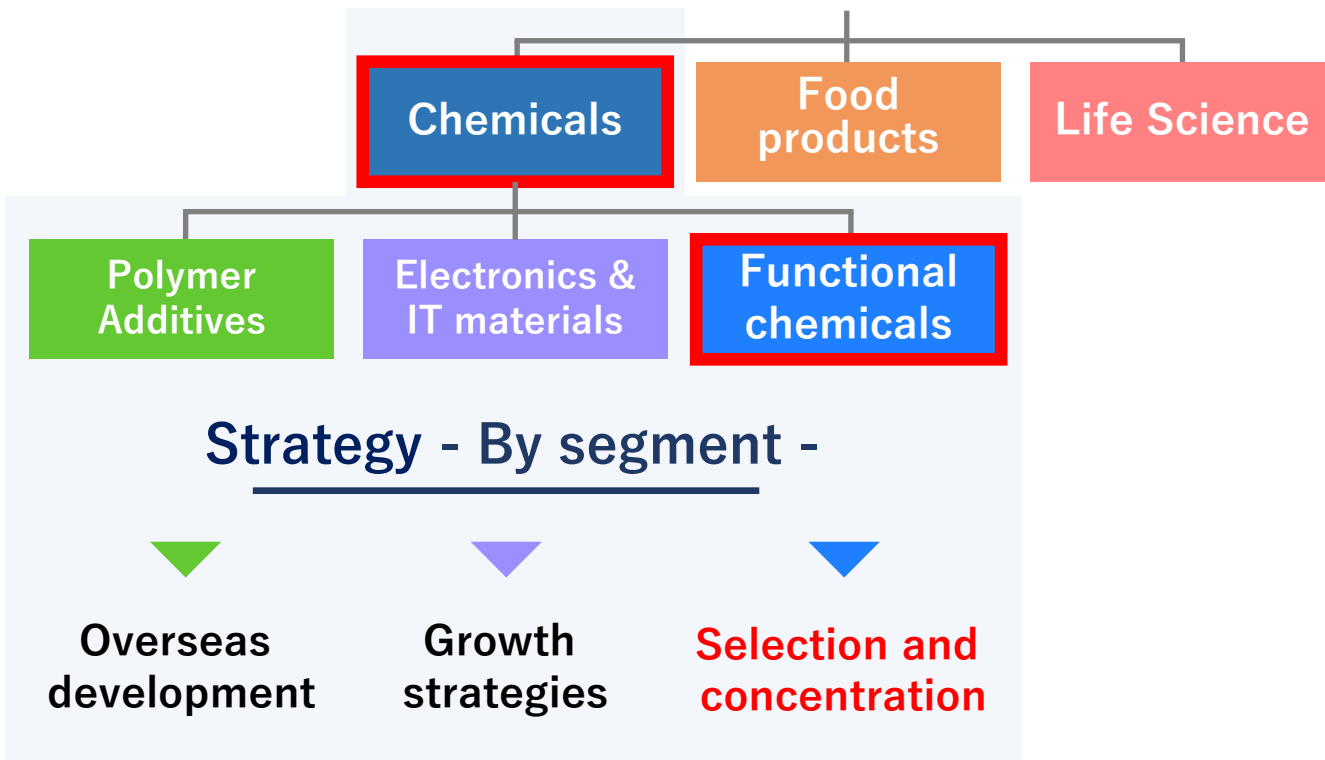
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# Current status of functional chemicals

~ The ADEKA SAKURA-LUBE lubricant additives for engine oils drive sales. ~

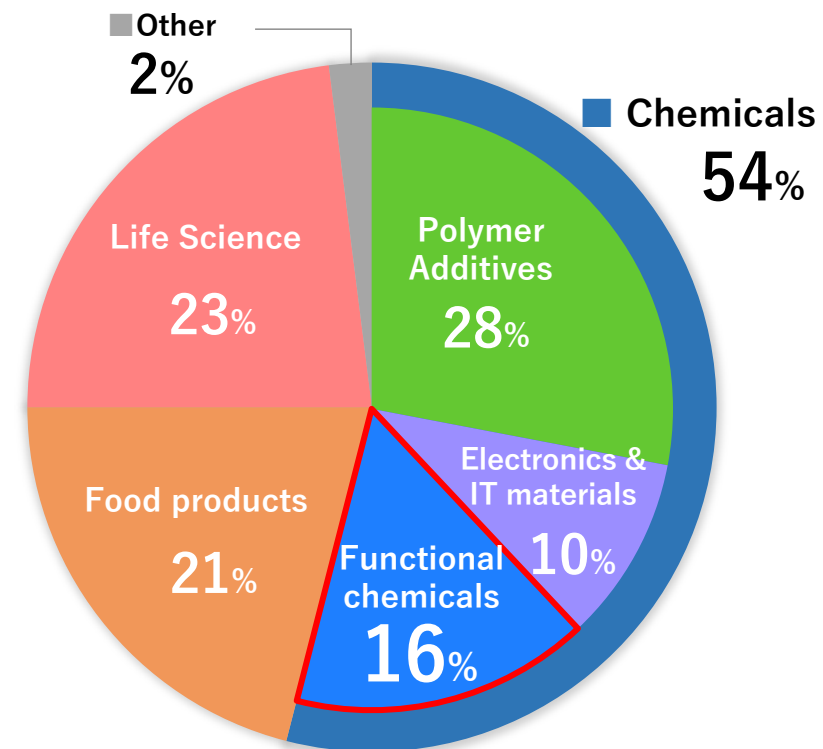
# Positioning of functional chemicals



**Consolidated net sales**

**FY2021 : 361.2 billion yen \***

\* Consolidated net sales(FY2021) are the figures after retrospective application of a change in accounting policy

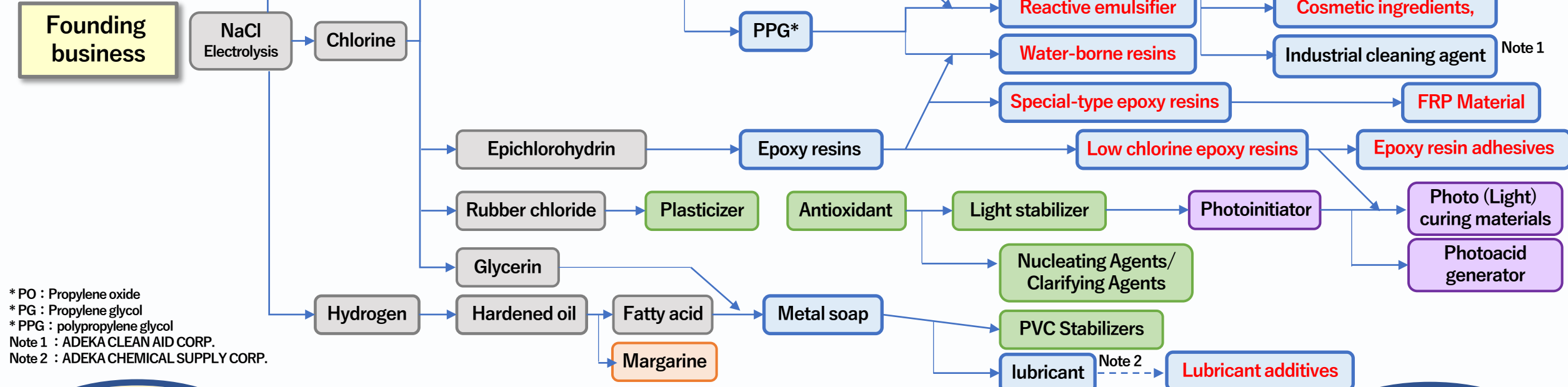


Chemicals account for 54% of overall sales. The strategy for functional chemicals is Selection and concentration.

# 1. Overview of Functional chemicals Technological transition

- Functional chemicals
- withdrawal products
- Polymer Additives
- Electronics & IT materials
- Food products

The products in red are listed in this presentation

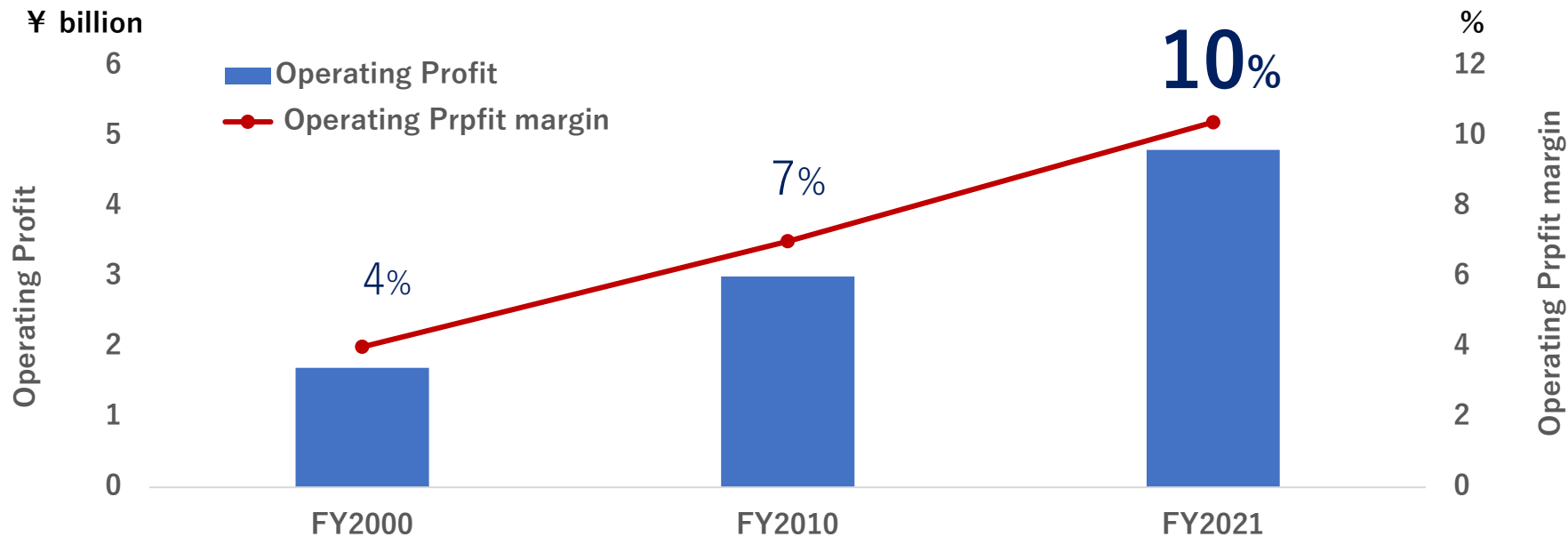


\* PO : Propylene oxide  
 \* PG : Propylene glycol  
 \* PPG : polypropylene glycol  
 Note 1 : ADEKA CLEAN AID CORP.  
 Note 2 : ADEKA CHEMICAL SUPPLY CORP.



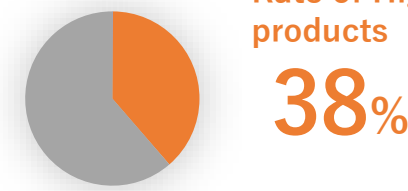
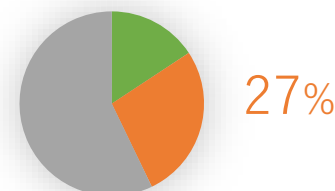
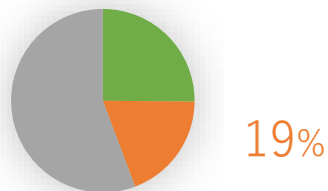
# Achievements of the past 20 years

Non-consolidated



Net sales      **42.9 billion**                      **43.1 billion**                      **42.3 billion**

Composition ratio (Net sales)



Rate of High value-added products

- Items withdrawn over the past 20 years
- High value-added products
- Core items

Improved profitability through the withdrawal of unprofitable items and a shift to high value-added items

# Sales composition by application (FY2021)

## Electronics

Semiconductors, electronic materials and adhesive agents

- **Epoxy resin adhesives**
- **Low Chlorine Epoxy Resin**
- Surfactants
- High purity hydrogen peroxide
- Hydrogen peroxide
- Persulfates

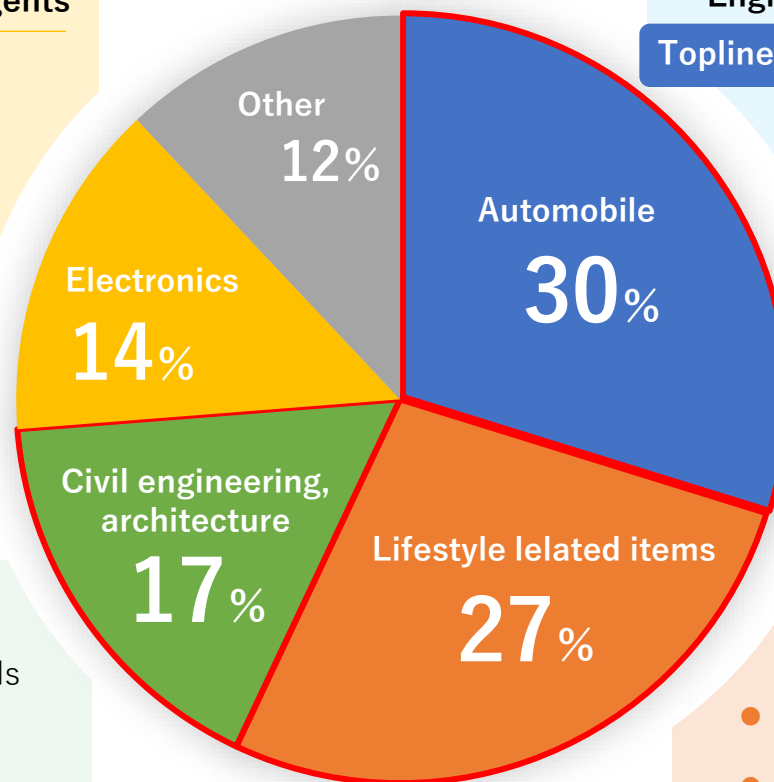
## Environmental considerations

### Civil engineering and architecture

Paints, flooring, water-stop and soil improvements

- **Reactive emulsifier**
- **Water-borne resins**
- Epoxy resins
- Industrial materials
- Surfactants

Accounted mainly for automobile- and life-related items



Next-generation vehicles

## Automobile

Engine oil, painting, coating materials, and adhesive agents

Topline

- **Lubricant additives**
- **Epoxy resin adhesives**
- **Special-type epoxy resins**  
(Adhesion promoter for structures)
- Surfactants
- Polypropylene glycol

## Environmental considerations

### Lifestyle related items

Cosmetics and toiletries, and food packaging labels

- **Cosmetic ingredients**
- **Reactive emulsifier**
- **Water-borne resins**
- Epoxy resins
- Surfactants
- Polypropylene glycol
- Hydrogen peroxide
- Sodium percarbonate

Strategic items presented in bold:

Refer to items that are expected grow and promoted globally among products whose markets are expected to expand.

# Expansion in sales of the Sakura Lube

Lubricant Additives for engine oil *ADEKA SAKURA-LUBE* series

Reduces friction and abrasion inside an engine

Improves fuel efficiency  
by one percent  
(Reduction of CO<sub>2</sub> emissions)

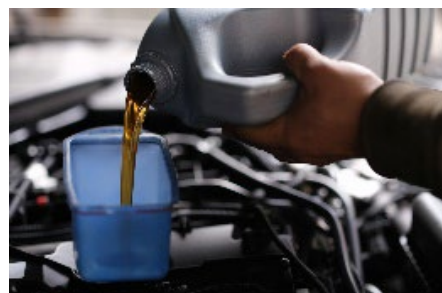
- Protects engines
- Achieves a longer service life of engine oil
- Features globally unique *SOZAI* (our Excellent Value; products, technologies and services)

## Targets of our products

Vehicles (Engine oil)



Factory fill oil for new vehicles  
(FF oil: Factory Fill oil)



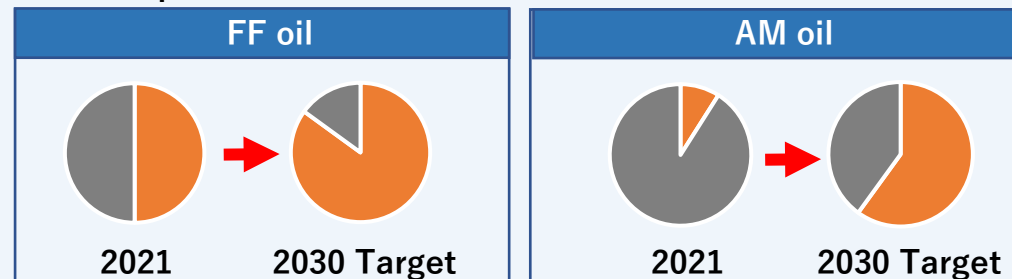
Replacement oil  
(AM oil: After Market oil)

## Increase in sales opportunities (global market)

Oil market size subject to *ADEKA SAKURA-LUBE* (FY2021)



Image of an increase in the adoption rate for our products  
■ = our products



FF oil

The volume of sales is expected to rise steadily due to the high rates of adoption for HEV, PHEV.

AM oil

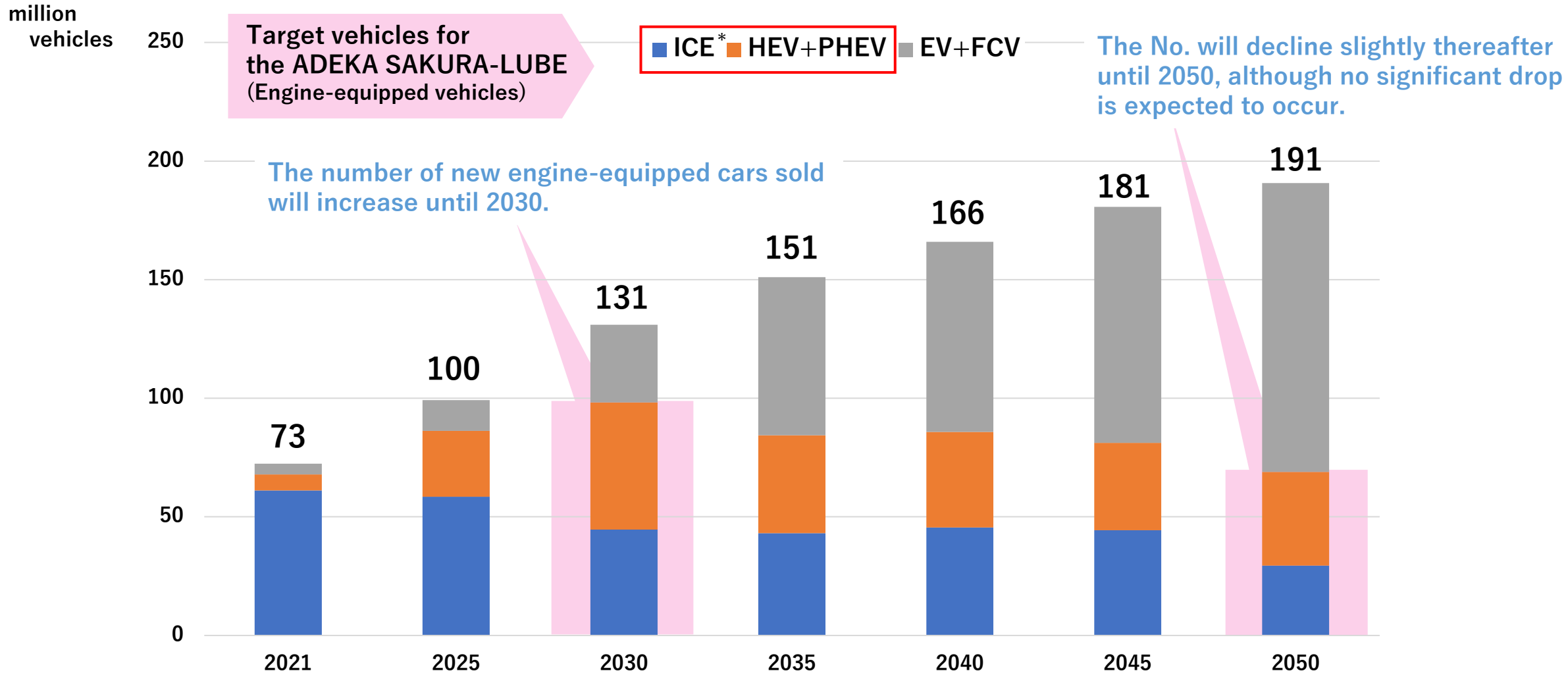
Enhance customer support by leveraging expertise in blending.  
Expand sales with a focus on the U.S., China and emerging countries.

Efforts are being made to develop the market of AM oil with a focus on the U.S., CHAINA and emerging countries. Despite an increase in the ratio of EV, *ADEKA SAKURA-LUBE* will be profitable stably through stepped-up efforts for a shift to AM oil and expansion of its business domain.



# Market trends of new vehicles

Global new vehicle sales (forecast)

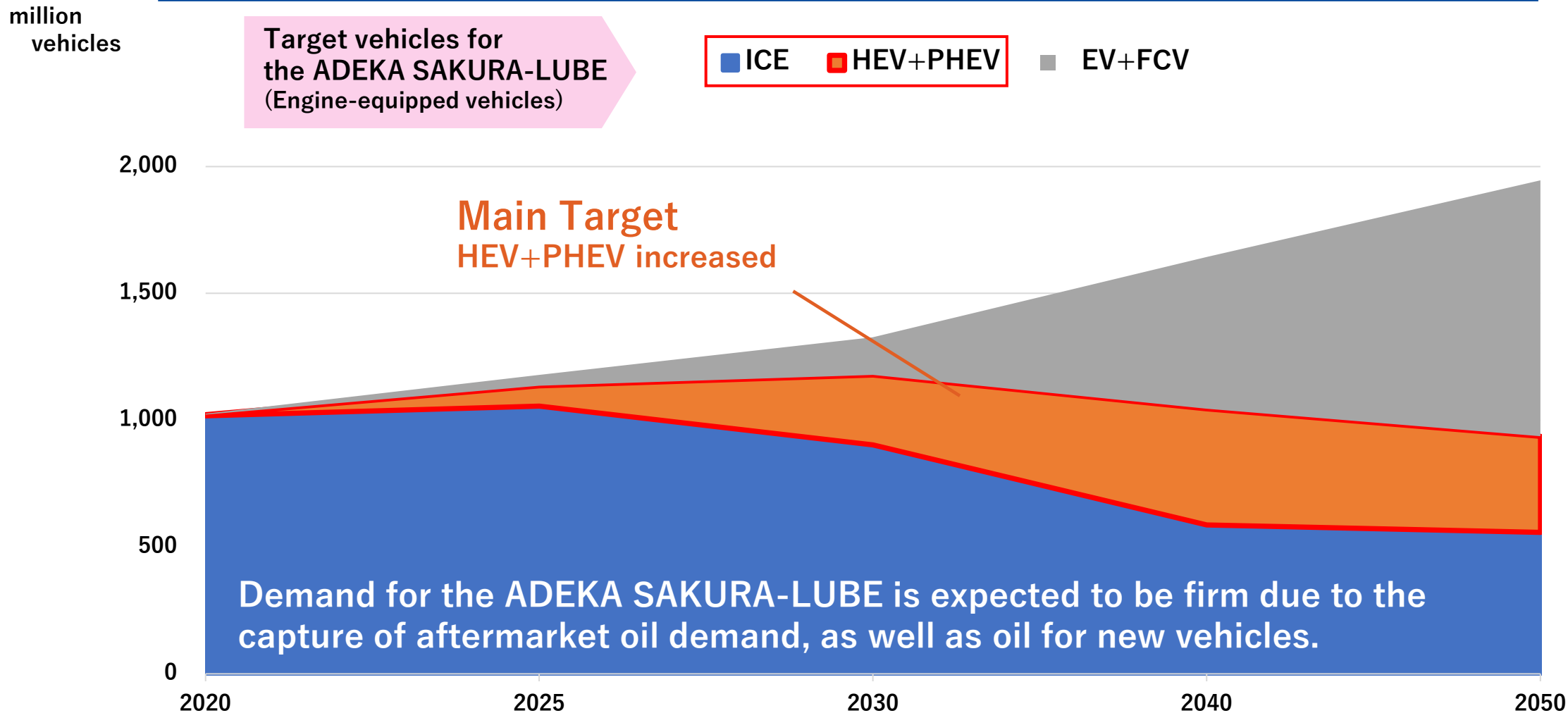


\* ICE : Internal Combustion Engine

\*\* According to the Company's survey (August 2022)

# Market trends of vehicles owned

Expected changes in the No. of vehicles owned around the world (forecast)



\* According to the Company's survey (August 2022)

# Future of functional chemicals

~ Globally expand sales of compound agents for next-gen. vehicles and environmentally conscious, high value-added items ~

# Vision and KPIs

## F Y 2 0 3 0 Vision of Functional Chemicals

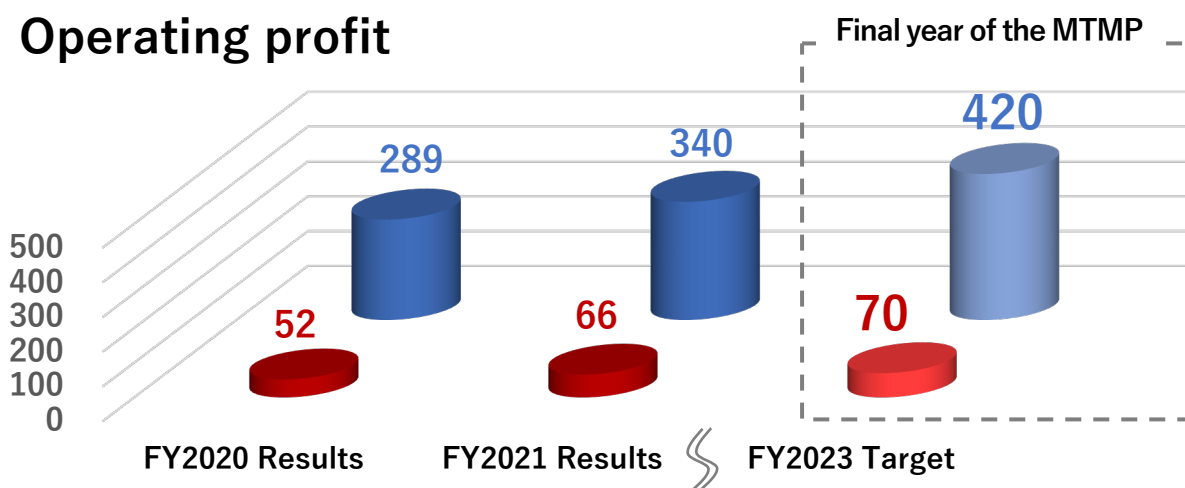
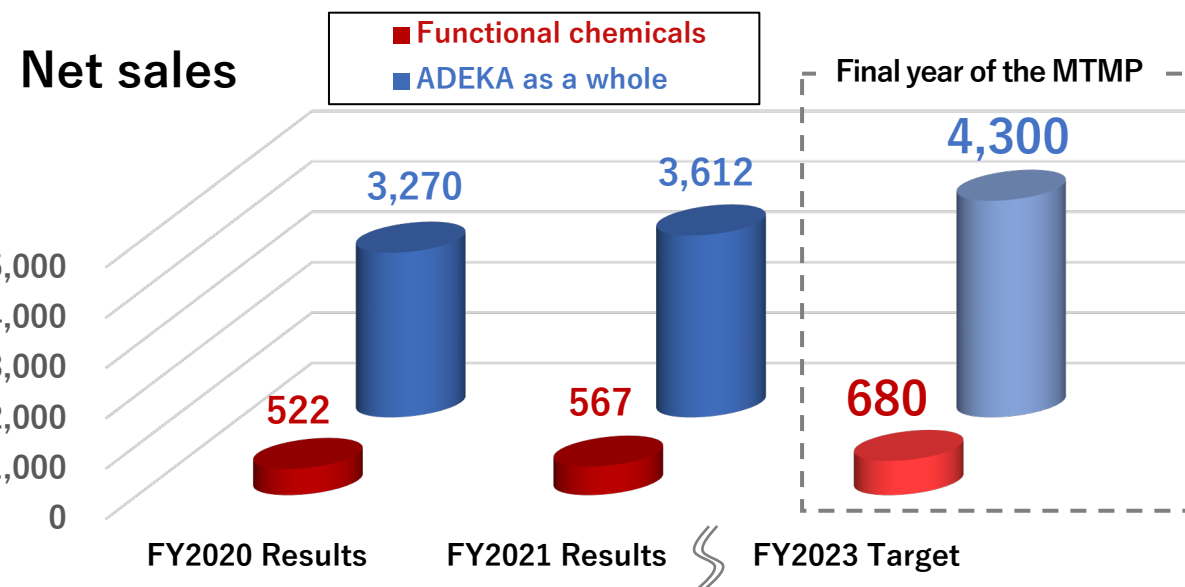
A future (2050)-creating company that leverages ADEKA's technologies to realize a sustainable society and affluent lifestyles

*Back cast*

## F Y 2 0 2 3 Ideal state of Functional Chemicals

A company that actively offers environmentally conscious items with a focus on growth areas (next-gen. vehicles and infrastructure)

Note 1 : Figures are expressed in units of 100 million yen and have been rounded off.  
 Note 2 : FY2021 are the figures after retrospective application of a change in accounting policy.



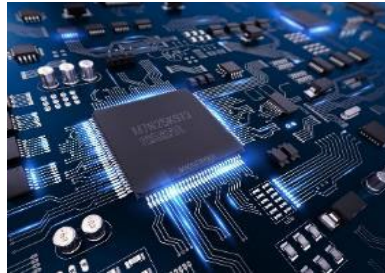
# Concentration of management resources for target markets

## Next-gen. vehicle

- Leverage accumulated expertise to develop new products that respond to demand for next-gen. vehicles
- Utilize the adhesive and bonding technology, blending technology and molecular functionalization technology and contribute to automotive technological innovations



In-vehicle camera module



ECU\* substrate



Adhesion promoter for structures(Weld bond)



Materials for protective coatings

## Environmental considerations

- Expand human- and eco-friendly businesses to respond to the VOC regulations and create new businesses
- Take advantage of the high molecular functionalization technology and interface control technology and offer materials that contribute to society



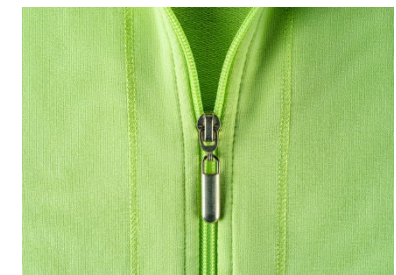
Materials for coating applications



Materials for adhesion and bonding applications



Anti-corrosive coatings



Materials for apparel products

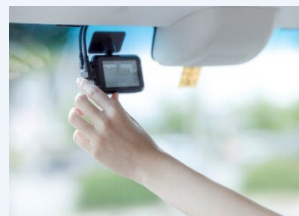
\* ECU : Engine Control Unit

# Epoxy resin adhesives that realizes electrification

Epoxy resin adhesives *ADEKA REMYLOP* series

High-precision adhesion and connection of electronic components, etc.

### Targets of our products

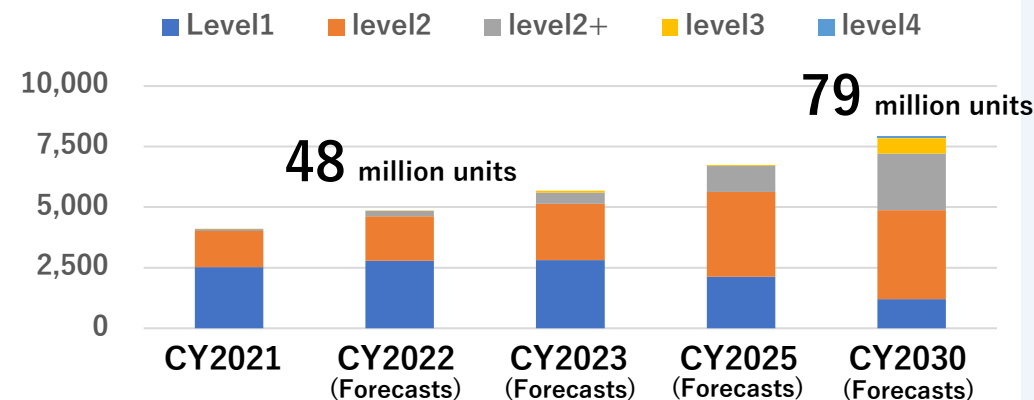


In-vehicle camera module



ECU\* substrate module

### Changes in the No. of Advanced Driving Assistant Systems



Source: Created by the Company based on materials published by Yano Research Institute Ltd. Yano Research Institute website : [https://www.yano.co.jp/press-release/show/press\\_id/3043](https://www.yano.co.jp/press-release/show/press_id/3043)

Plan for the construction of a new plant of epoxy resin adhesives

location

**Mie Plant**

Start of operation

**In FY2023 (Scheduled)**



▲ Mie Plant's manufacturing building

Contribute to improvements in technologies for the fixation of precision materials

→ Construct a new plant and facilitate the development of such materials into top-rated items in the niche market.

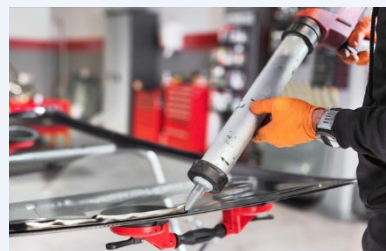
# Special-type epoxy resin that realizes weight-saving

Special-type epoxy resin for vehicles *ADEKA RESIN series*

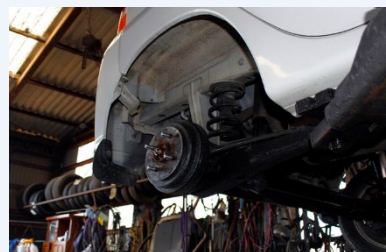
Bonding of materials of different types such as iron and aluminum etc.



Targets of our products



Adhesion promoter for \* structures (Weld bond)



Materials for protective coatings \*\*

Leveraging of technologies nurtured through the development of automotive materials

Expansion of target areas



Realization of lighter and stronger products, larger-size products with fast curing, and longer product life

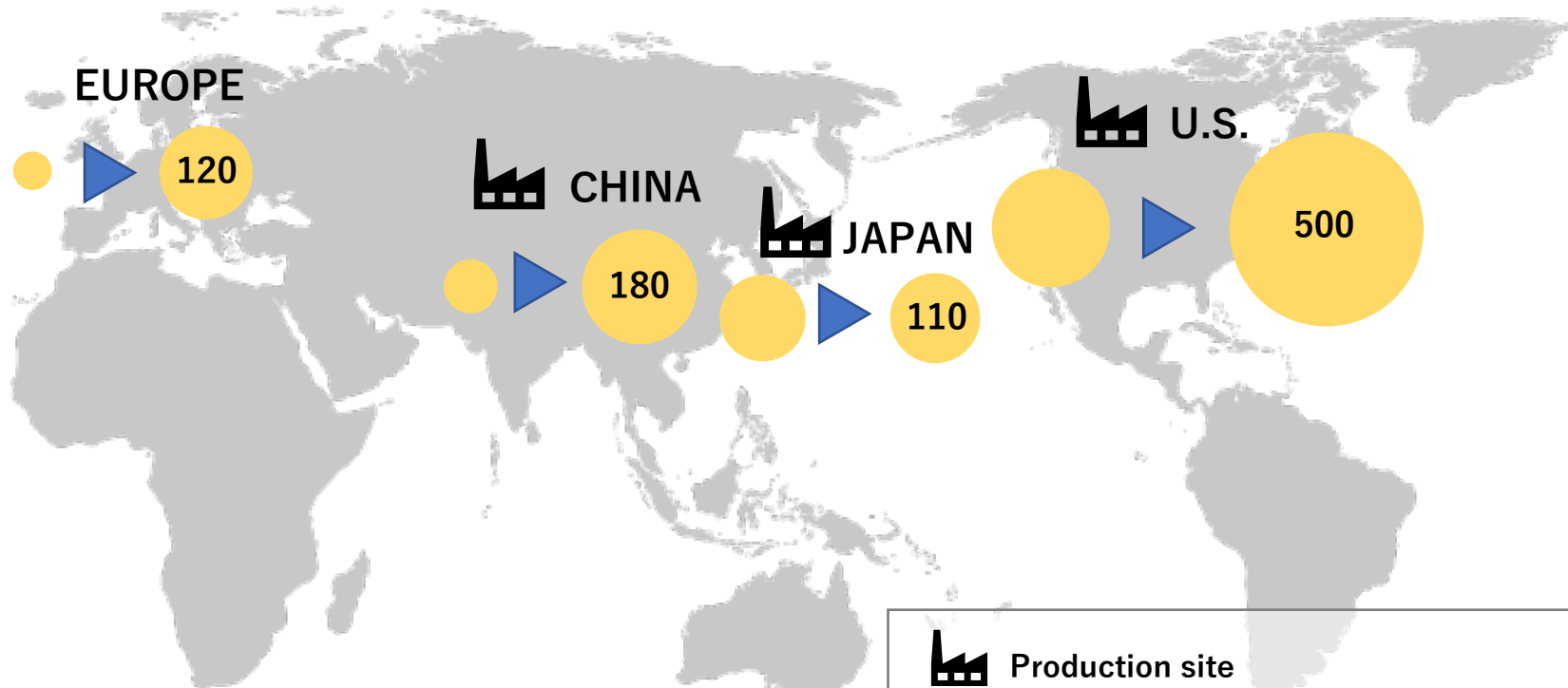
Realize weight-saving of vehicles and contribute to energy-saving  
→ Application of expertise nurtured through vehicle weight-saving to other areas

\* Alternative to the spot welding of vehicle bodies  
\*\* Protective coatings for the lower part of a vehicle body

# Overseas expansion of special-type epoxy resin

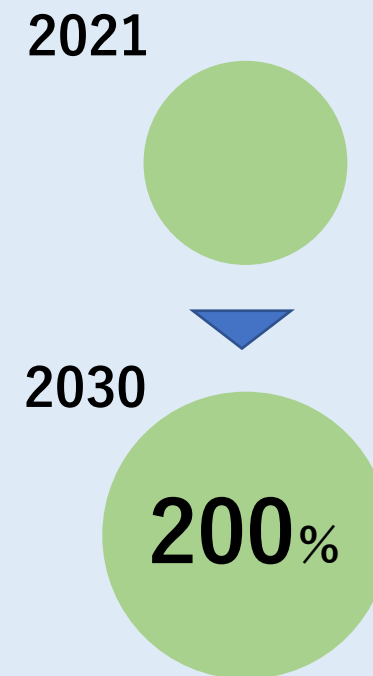
## Expected sales volume of Special-type epoxy resin for vehicles

2021 2030 Comparison with the FY2021 shipment result in Japan, which is defined as 100



Production site  
Established production systems in three bases – JAPAN, the U.S. and CHINA

## Sales target of Special-type epoxy resin for vehicles



Strengthen collaboration with target customers in JAPAN, the U.S. and CHINA and develop the item into a top-rated product in the niche market



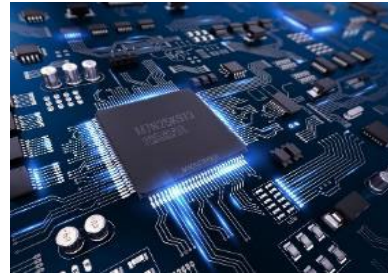
# Concentration of management resources for target markets

## Next-gen. vehicle

- Leverage accumulated expertise to develop new products that respond to demand for next-gen. vehicles
- Utilize the adhesive and bonding technology, blending technology and molecular functionalization technology and contribute to automotive technological innovations



In-vehicle camera module



ECU\* substrate



Adhesion promoter for structures(Weld bond)



Materials for protective coatings

## Environmental considerations

- Expand human- and eco-friendly businesses to respond to the VOC regulations and create new businesses
- Take advantage of the high molecular functionalization technology and interface control technology and offer materials that contribute to society



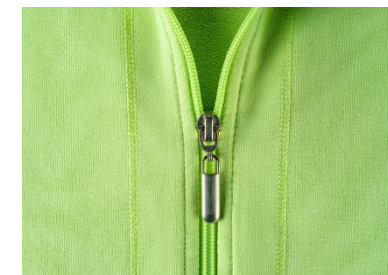
Materials for coating applications



Materials for adhesion and bonding applications



Anti-corrosive coatings



Materials for apparel products

\* ECU : Engine Control Unit

**Our initiatives**

Expand human- and eco-friendly businesses  
and create new businesses



<p><b>Water-borne coating materials</b></p>	<p>Human- and eco-friendly coating materials that contribute to the reduction of VOC*</p>								
<ul style="list-style-type: none"> <li>● <b>Reactive emulsifiers</b> For Acrylic resin</li> <li>● <b>Water Borne Resins</b> Urethane Resins, Epoxy resins</li> </ul>	<table border="1"> <tr> <th data-bbox="830 696 1258 758">Target</th> <td data-bbox="1302 715 1640 943"></td> <td data-bbox="1676 715 1997 943"></td> <td data-bbox="2033 715 2384 943"></td> </tr> <tr> <td data-bbox="830 758 1258 951"> <p>Coating applications Adhesion and bonding applications</p> </td> <td></td> <td></td> <td></td> </tr> </table>	Target				<p>Coating applications Adhesion and bonding applications</p>			
Target									
<p>Coating applications Adhesion and bonding applications</p>									

<p><b>Cosmetic ingredients</b></p>	<p>A broad lineup including general-purpose/functional materials and human-friendly natural raw materials</p>	
<ul style="list-style-type: none"> <li>● Glycol for cosmetics</li> </ul>	<ul style="list-style-type: none"> <li>● Hydrogelator</li> </ul>	<ul style="list-style-type: none"> <li>● Natural ingredients</li> </ul>

\* VOC : Volatile Organic Compounds

# Expansion of the business of reactive emulsifiers

Reactive emulsifiers *ADEKA REASOAP* Series

Targets

Acryl emulsion including *ADEKA REASOAP* ⇒

**Water-based, high water resistance and high corrosion resistance.**



For coating applications

*ADEKA REASOAP*

+ Raw materials A

+ Raw materials B



For adhesion and bonding applications

## Background to the increase in usage

### Coating applications



Demand grew due to changes in lifestyles in INDIA, CHINA and the MIDDLE EAST and VOC reductions.

### Adhesion and bonding applications



- The applications expanded into food packaging materials for Europe and the U.S. following the acquisition of FDA approval.
- Prevention of the discoloration and peeling of labels due to wet with in water.
- Anti-microplastics measures

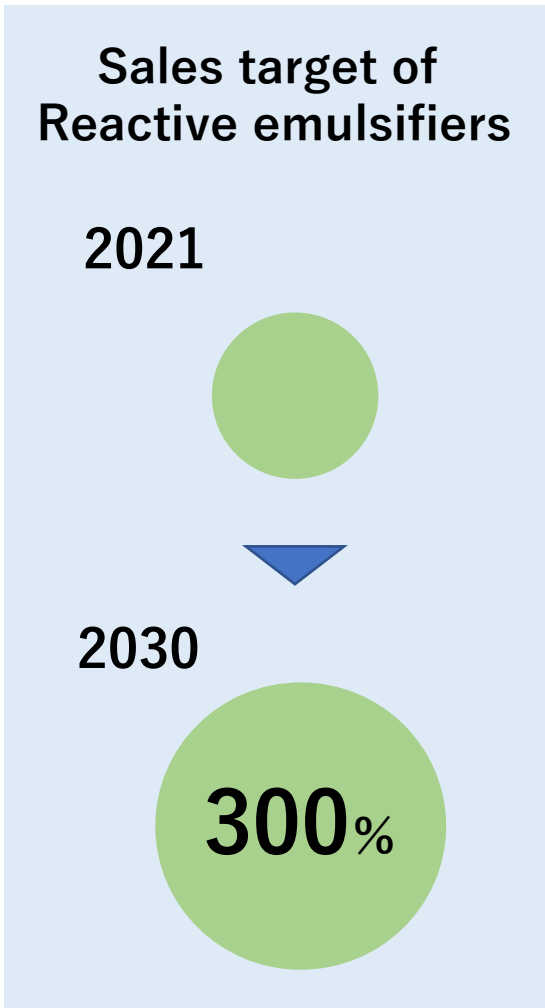
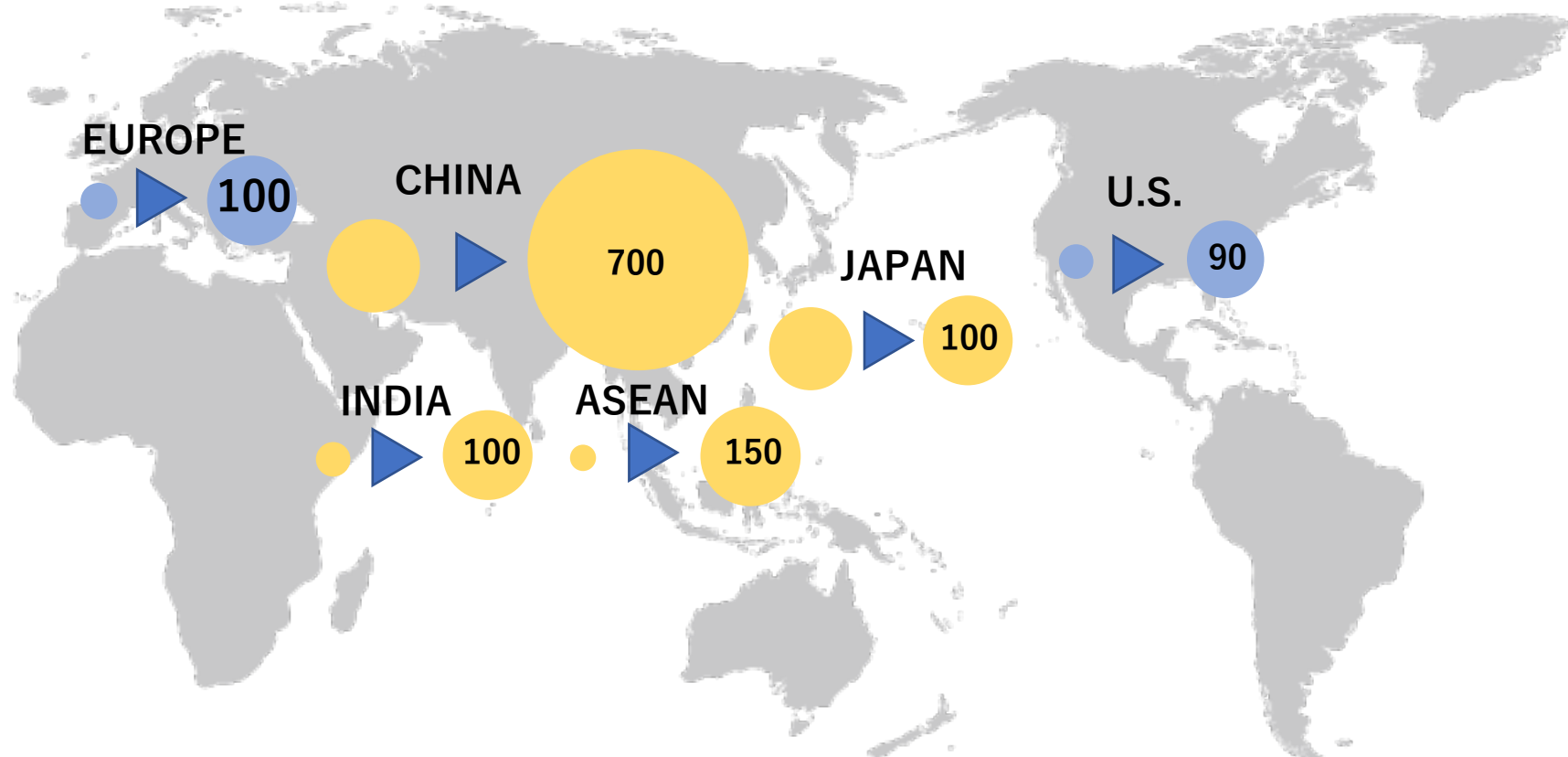
Surfacing of demand for human- and eco-friendly coating and adhesive products  
→ Enhance customer satisfaction through the offering of the *ADEKA REASOAP*

# Overseas expansion of reactive emulsifiers

## Expected sales volume of Reactive emulsifiers

2021 2030 Comparison with the sales volume In Japan for FY2021 which is defined as 100

Coating applications Adhesion and bonding applications



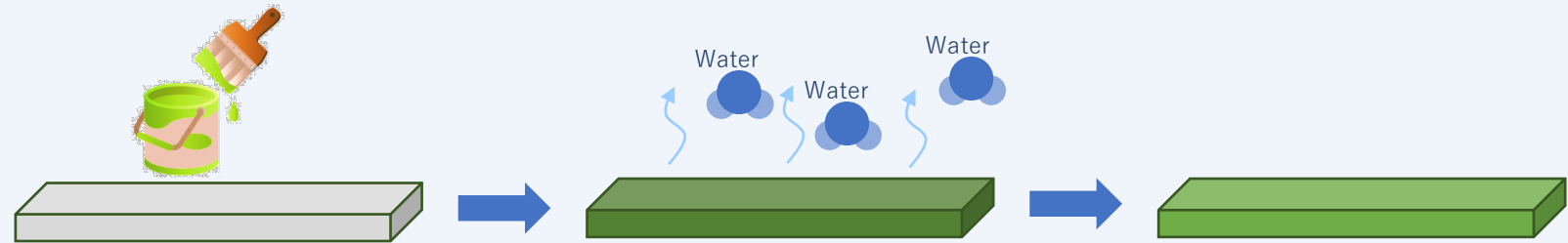
Demand for coating applications grow in ASIA and that for adhesive agents rose in EUROPE, the U.S..  
→ Aiming to make the item top-rated in the niche market globally.

# Expansion of the business of water-based resin

Water Borne Resins  
*ADEKA BONTIGHTER · ADEKA RESIN series*

Made improvements in rust resistance, flexibility and weather resistance

Shift from solvent-based to water-based  
▼  
Reduction of VOC



### Targets



Automotive parts



Agricultural film

### Expansion of our field



Anti-corrosive coatings  
(Stricter environmental regulations)



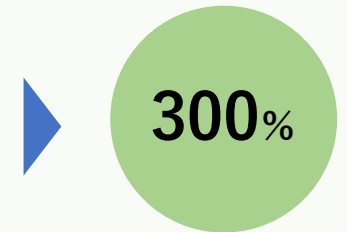
Apparel industry  
(Ecotex certificate)

### Sales target of Water borne resins

2021



2030



Strengthening of environmental regulations in CHINA

→ Promote marketing in the Chinese market through collaboration with the Innovation Center in CHINA.

# New product development leading to 2030

Social value

Development of new products with a view to solving issues

Expansion of the renewable energy

## Wind-power generation blades for CFRP (Fiber-reinforced plastic)



- Makes structural materials such as windmill blades lighter and more robust.
- Enables molding easily in a short time.
- Makes possible large-size products with a longer product life.

Air quality protection

## Fuel additive for ships

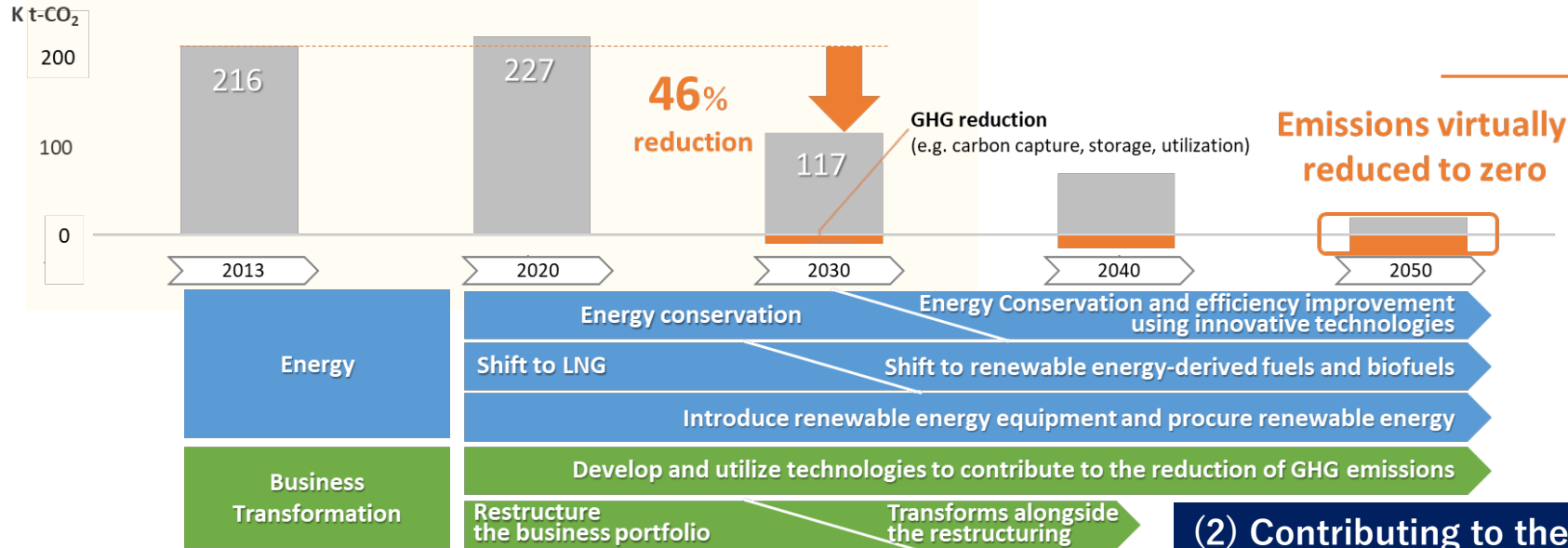


- Responds to the tightening of the sulfur content of marine fuels.
- Makes improvements to any shortfalls in the performance of existing items.
- The Company started to supply items at the main ports of JAPAN and overseas.
- It will increase overseas supply bases while simultaneously striving to increase sales.

# Response to carbon neutrality

## (1) Reducing GHG emissions from our business activities

2030 Target (Scope 1+2) **46% reduction** (FY2013 Comparison)



ADEKA Group  
**2050**  
Achieve carbon neutrality

## (2) Contributing to the reduction of GHG emissions through the creation of technologies and products

- Examine GHG emissions throughout the supply chain
- Develop and provide sustainable products.
- Promote the sustainable procurement of raw materials
- Optimize and increase the environmental friendliness of logistics etc.

Creation of sustainable and competitive plants

→ Pursue a selection and concentration strategy and take steps to reduce CO<sub>2</sub> emissions

## Functional chemicals

Implement  
the selection  
and  
concentration  
strategy

Make a shift in  
business to  
focus on  
high value-  
added products

### Mid-term Management Plan *ADX 2023*

#### Business area to be covered

Next-gen. vehicle

Environmental  
considerations

Response to  
carbon neutrality

#### | FY2023 (Target)

Operating  
profit

**7.0** billion yen

( **Net sales 68** billion yen )