



# 03

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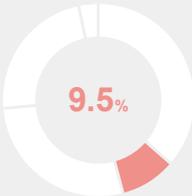
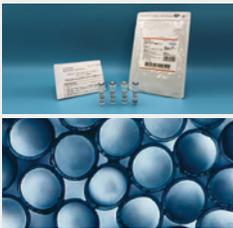
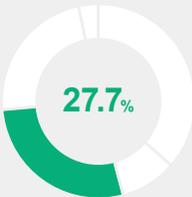
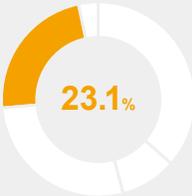
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# Overview by business

		Consolidated net sales composition ratio	Net sales and operating profit (¥billion)	Main applications	Examples of products
<b>Films</b>  <p>This consists of two fields: The industrial film business and the packaging film business. Industrial films include films for liquid crystal polarizers, displays, synthetic paper, labels, ceramic capacitors, etc. Packaging films include multifunctional films centered on food packaging, for which we maintain a leading share in Japan.</p>		 <p>36.5%</p>	<p>Net sales <b>146.1</b></p> <p>Operating profit <b>1.6</b></p>	<ul style="list-style-type: none"> <li>Industrial films</li> <li>Packaging films</li> </ul>	
<b>Life Science</b>  <p>This consists of three fields: The bio business, medical materials business, and pharmaceutical contracting business. The bio business includes material enzymes related to clinical testing, diagnostic reagents and drugs, and diagnostic systems. The medical materials business includes materials related to treatment, such as dialysis membranes. The pharmaceutical contracting business involves contract manufacturing of drugs.</p> <p>Our high-value-added products, made possible through our proprietary technology, include artificial kidney hollow fiber and diagnostic systems that halve the time required to obtain PCR testing results.</p>		 <p>9.5%</p>	<p>Net sales <b>38.1</b></p> <p>Operating profit <b>9.2</b></p>	<ul style="list-style-type: none"> <li>Bio-related products</li> <li>Cosmetics ingredients</li> <li>Medical separation membranes and modules</li> <li>Medical equipment</li> <li>Pharmaceutical-related products</li> </ul>	
<b>Environmental and Functional Materials</b>  <p>TOYOBO MC Corporation launched in April 2023 as a joint venture with Mitsubishi Corporation. Its businesses consist of the resin and chemical business and the environment and fiber business. Businesses that have migrated to the new company include VYLON<sup>®</sup>, HARDLEN<sup>®</sup>, photo functional materials, fine chemicals, engineering plastics, aqua membranes, VOC recovery equipment, functional filters, spunbond, lifestyle materials, and super fibers.</p>		 <p>27.7%</p>	<p>Net sales <b>110.8</b></p> <p>Operating profit <b>4</b></p>	<ul style="list-style-type: none"> <li>Adhesion and coating agents</li> <li>Engineering plastics</li> <li>Elastomers</li> <li>Seawater desalination membranes and modules</li> <li>Environmental solution equipment and filters</li> <li>High-performance fibers</li> <li>Lifestyle materials</li> </ul>	
<b>Functional Textiles and Trading</b>  <p>This consists of the airbag business, functional textile business, apparel textile business, and trading company functions (TOYOBO STC CO., LTD.). For overseas expansion, the airbag business operates under a tripolar structure in Thailand, China, and the U.S. The textile business is advancing globally, including in Southeast Asia, China, and India.</p>		 <p>23.1%</p>	<p>Net sales <b>92.4</b></p> <p>Operating profit <b>-2.5</b></p>	<ul style="list-style-type: none"> <li>Airbag fabrics and yarn</li> <li>Sports, inner wear, uniforms, and other apparel</li> </ul>	

# Films

We will contribute to sustainability  
for people and the earth  
through our technologies  
for high-performance films



**Muneo Hirooka**

Managing Executive Officer  
Head of Films Division

## The strengths of Toyobo

- Films for packaging (a leading share in food packaging)
- Industrial films (mold releasing films for MLCC, polarizer protective films for LCDs, etc.)

## Opportunities and risks

### Opportunities

- Expansion of demand for green films aimed at a circular society and carbon neutrality
- Expansion of need for reduction of plastics (increase in the value of technologies for thinner materials)
- Expansion of demand for high-performance films as digital society advances

### Risks

- Rise of political instabilities around the world and subsequent impacts on markets
- Soaring costs of raw materials and fuels and increase in procurement risks

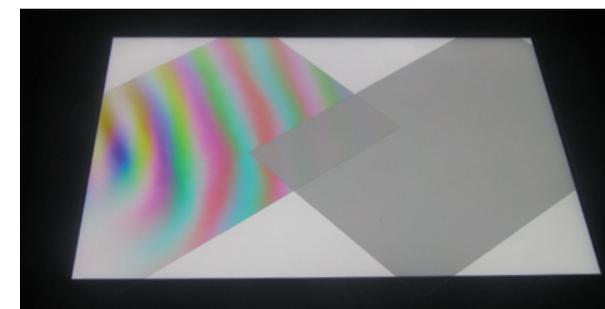
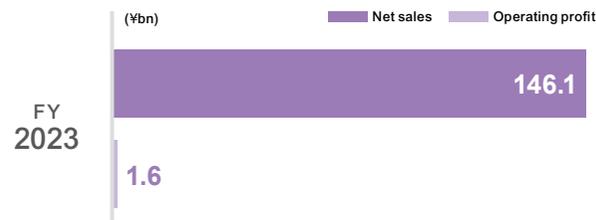
## Business overview in fiscal 2023

In fiscal 2022, customers in many industries resumed production activities, resulting in special demand. Consequently, a backlash occurred in fiscal 2023, and the market overall remained sluggish under multiple factors including an inventory adjustment phase. Industrial films in particular were greatly affected by slumping automotive production and let-up in demand for mold releasing films for MLCC. In the area of earnings, prices of raw materials and fuels continued their sharp rise. Turmoil also occurred in procurement, due to factors including withdrawal from business by domestic and overseas manufacturers of crude raw materials and other materials. In packaging films, our revisions of product prices were unable to keep up with increases in raw material and fuel prices, leading to a significant decrease in overall profit from the previous year.

Amid sluggishness in the overall market, environmentally considerate films made with recycled resins, bioresins, and other materials are exhibiting growth beyond expectations, with demand expected to continue growing. High-retardation LCD polarizer protective film, an area in which Toyobo enjoys a technological advantage, remained solid.

As a result of the above, net sales in the segment were ¥146.1 billion and operating profit was ¥1.6 billion (results for new segment).

## Net sales and operating profit (¥billion)



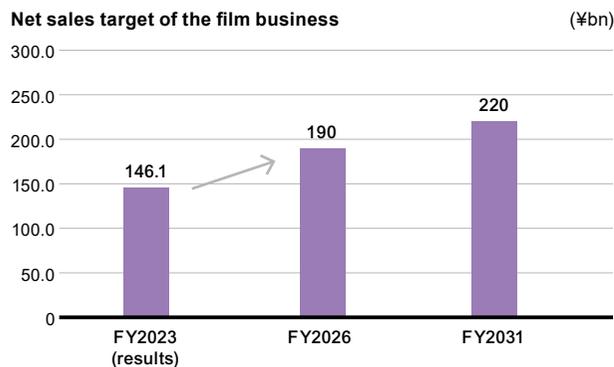
COSMOSHINE SRF<sup>®</sup> LCD polarizer protective film

# Films

## Growth strategy

We are advancing our growth strategy atop the two pillars of “progress of digital society” and “a decarbonized and circular society.” Our main strength lies in the polyester-based releasing film used in the ceramic capacitor manufacturing process. Our film is highly regarded for its functionality, and our capabilities for integrated production and processing of film give us an advantageous position in the market. We intend to undertake new product development for this film as well as establish technology for its recycling. We will also advance the development of new products and applications for LCD polarizer protective film and high-durability and heat-resistant polyethylene naphthalate (PEN) film for use as fuel cell sealing material.

In the area of reducing plastic waste, films stand at the forefront of environmental issues. We will reduce the thickness of films and advance adoption of biomass-based raw materials to help achieve a decarbonized society. Our new machinery for biaxially-oriented polypropylene (OPP) films let us maintain strength even in significantly thinner OPP films, contributing to a circular society through a shift to mono-materials. Films are indispensable materials in distribution and in people’s lives. We are making efforts in individual products to increase our environmentally considerate product lineup.



## Capital investment and R&D investment

We plan to invest ¥80 billion under our 2025 Medium-Term Management Plan (2025 MTP, FY2023 to FY2026), of which about 80% is earmarked toward growth investments. We will first continue increasing production and expanding sales in line with market recovery in high-performance films. Production capacity for mold releasing film for ceramic capacitors will increase about 2.5-fold through the combination of our new first and second coating machinery units, and production volume of COSMOSHINE SRF® LCD polarizer protective film will increase about 1.2-fold. We will also make active investments in the development of the high-rigidity films noted earlier, in 100% bioresin films, and in films made with recycled raw materials, as well as in the creation of mechanisms for recycling processed films inside and outside of our company.



New manufacturing facilities at the Utsunomiya Plant (mold releasing film for ceramic capacitors)

## Future initiatives

In fiscal 2024, we will first work to reset our pillars of earnings and recover profitability. We will further undertake price revisions for packaging films, a major issue remaining from fiscal 2023, and will quickly undertake full-scale launches of new products and an OPP film production line. Keeping a constant eye on the state of recovery in markets, we will meet customers’ expanded production structures with our mold releasing film for MLCC and will proceed with construction of a new production line. In LCD polarizer

protective film, too, we will meet customers’ expanded production structures while also carrying out price revisions.

Under the 2025 MTP, the film business is focusing its sight on three of the five social issues of Sustainable Vision 2030. The first of these is “employee well-being and human rights in the supply chain.” With seven manufacturing sites in Japan and overseas, the business considers the safety of employees, the fostering of motivation, and the achievement of disaster prevention and zero disasters at worksites to be the most important issues for its business bases. The next issue of focus is “a decarbonized and circular society.” Here the business seeks to achieve Scope 1 and 2 carbon neutrality and to widely supply society with films that contribute to the environment and resource recycling-oriented films. Finally, with regard to the issue of “clean water areas, air and soil, and the preservation of biodiversity,” the business will contribute to the reduction of food loss and waste through high-performance packaging films that maintain food freshness. In this business, we will set individual targets for these issues, make them known throughout the company, and tackle them together.

On the theme of resource recycling, initiatives at the level of the company or this business face limits in increasing the efficiency and efficacy of recycling. Accordingly, we are actively taking part in resource circulation initiatives that span industries, including the creation of mechanisms for the recycling of films for ceramic capacitors with the involvement of electrical and electronic products manufacturer customers, as well as a recycling project for label paper (KAMISHINE® mold releasing film) in cooperation with medical manufacturer and printing industry customers. We hope to expand our recycling technologies not only within Japan but also into initiatives that cross national borders.

CSV examples

Films

Contributing to reducing plastic volume  
New development of the world's thinnest 20µm shrink film



**Masahito Jinguji**

Manager  
Packaging Operating Department



**Shigeto Yoshida**

Manager  
Packaging Operating Department

Toyobo is a specialty manufacturer of PET films in the shrink film market. Our policy is to boost our competitiveness through product development that is cutting-edge in terms of both performance and environmental consideration. Our production technology creates thinner films while maintaining strength, an achievement that cannot be imitated by others. In 2012, we succeeded in developing and launching SPACECLEAN<sup>®</sup>, a heat shrinkable PET film that significantly cuts the mainstream 40µm thickness to a world's-thinnest 20µm. This product offers benefits not only in the environmental value of reducing plastic volume but also in terms of productivity, and has found use with many customers, mainly beverage producers.

In response to strong demands by customers, we will also start using recycled PET material from bottles to produce this 20µm film. In the past, the use of recycled raw materials yielded differing grades of product. We will further expand this and contribute to achieving customers' specific goals for sustainable packaging.

Along with the reduction of plastics, the reduction in use of virgin raw materials is also a pressing global issue. We plan to actively propose products made from recycled raw materials to our customers overseas as well. As PET labels are easier to recycle than polyvinyl chloride and polystyrene labels, we aim to build a resource circulation network for recycling containers that use shrink film, drawing on cooperation from brand owners, converters, and recycling business operators in overseas markets.



PET bottle labels made with SPACECLEAN<sup>®</sup> heat-shrinkable PET film

Contributing to the proliferation of next-generation energy and a carbon-neutral society  
TEONEX<sup>®</sup> PEN film adopted for use in Toyota's fuel cell vehicles



**Hisato Ichimiya**

Manager  
Films New Business  
Development  
Operating Department



**Kenji Handa**

Industrial Films Operating  
Department

Our TEONEX<sup>®</sup> high-durability and heat-resistant polyethylene naphthalate (PEN) film is positioned as a de facto global standard, finding wide use in automotive applications in recent years. Since the early 2000s, we have proposed TEONEX<sup>®</sup> to the automotive market as a material that will contribute to innovation in highly anticipated, next-generation technologies for fuel cells. In 2020, we developed a sealing material that subjects TEONEX<sup>®</sup> to a proprietary adhesive coating and precision processing. This sealing material has been adopted for use in the "MIRAI" fuel cell automobile for its high durability even in high-temperature or other harsh environments, and for its contribution to ensuring long-term reliability in fuel cells. Changing from conventional vulcanized bonding to thermoplastic bonding with sealing material that uses TEONEX<sup>®</sup> has significantly improved cycle time from over 10 minutes to several seconds. This accomplishment earned the product the "Toyota Group Technology & Development Award" in fiscal 2021.

Fuel cell vehicles are the ultimate "eco-cars," emitting only water during operation. Fuel cell vehicles, including large buses, trucks, and passenger automobiles, are expected to become widespread throughout the mobility sector. In addition to bonding, TEONEX<sup>®</sup> provides functions including protection of power generation surfaces, insulation, and retention of gas intake/exhaust shape, contributing to technological innovation in fuel cells. The product is also expected to see use in water electrolytic hydrogen generators. The use and evaluation of TEONEX<sup>®</sup> is advancing in hydrogen-related markets around the world. TEONEX<sup>®</sup> holds potential as a key component supporting the hydrogen society of the future, and is indispensable as a material for proliferation of next-generation energy and the achievement of a carbon-neutral society.



"MIRAI" fuel cell vehicle, an adopter of TEONEX<sup>®</sup>

# Life Science

Through our proprietary technologies, we are aiming for the top of our global niche and will contribute to healthy living and health care for people worldwide



**Takahito Sagara**  
Managing Executive Officer  
Head of Life Science Division

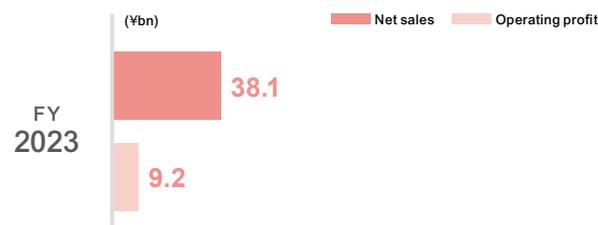
## The strengths of Toyobo

- Integrated development and manufacturing that spans raw materials to end products in the diagnostic reagent and drug domain; securing of dominance in quality
- Film forming technology for hollow separation membranes (development began in the 1970s)
- Exclusive position in the global market for CTA membranes for dialysis applications

## Opportunities and risks

- |               |   |
|---------------|---|
| Opportunities | <ul style="list-style-type: none"> <li>• Expansion of demand for genetic testing (PCR) amid the spread of infectious diseases</li> <li>• Acquisition of national policy-based development support and subsidies for antibody drugs and testing systems</li> </ul> |
| Risks         | <ul style="list-style-type: none"> <li>• Sharp exchange rate fluctuations</li> <li>• Soaring oil and coal prices due to shift away from fossil fuels</li> <li>• Shortages of supplies of goods procured overseas</li> </ul>                                       |

## Net sales and operating profit (¥billion)



## Business overview in fiscal 2023

In the bio business, sales of PCR test reagents decreased as cases of COVID-19 infections fell significantly in the 4th quarter, but sales of raw material enzymes for diagnostic drugs and genetic testing reagents in overseas markets remained strong. To expand the infection diagnosis solution business, in fiscal 2023 we introduced new products including in vitro diagnostics and reagents for simultaneous detection of whooping cough bacteria + para whooping cough bacteria, SARS-CoV-2 + respiratory syncytial virus, and SARS-CoV-2 + influenza virus.

In the medical materials business, sales of artificial kidney hollow fibers remained strong but were affected by soaring prices of raw materials and fuels. In policy measures, the business made preparations for the implementation of market evaluations ahead of the market launch of continuous renal replacement treatment (CRRT) in the next fiscal year.

The contract manufacturing business of pharmaceuticals ran up expenses related to dealings with the U.S. Food and Drug Administration (FDA), but sales recovered as production and shipment of over-the-counter formulations resumed in turn.

As a result, net sales in the segment were ¥38.1 billion and operating profit was ¥9.2 billion (results for new segment).



Reagents for the GENECUBE® fully automated gene analysis system SARS coronavirus nucleic acid kit

## Life Science

### Capital investment and R&D investment

In the bio business, we have invested about ¥6.5 billion in the Tsuruga Biochemicals Plant to create new manufacturing facilities, and are undertaking development of raw materials for PCR test reagents and genetic diagnostic drugs along with strengthening of our production system. A third cultivation and purification building will be built in first-stage construction, going into operation in April 2024. A research reagent building and genetic testing building will be built in second-stage construction, with completion and operation expected during fiscal 2025. We plan to further continue investments with the aim of tripling development and production capacity.

In the medical materials business, we have invested about ¥5 billion in the launch of an integrated production plant for dialysis equipment together with NIPRO Corporation. As this business's hollow fiber membrane manufacturing site is located in Yamaguchi Prefecture with assembly performed at a customer's plant in Akita Prefecture, issues have occurred in dealing with customers and the risks of long-distance transport. With the new investment, we are constructing and readying manufacturing facilities in an integrated production plant that connects our hollow fiber membranes and NIPRO's Odate Plant assembly lines, with the building structure and other components already completed.

Full-scale shipment of products is scheduled for July 2024.

We have also been tackling the development of CRRT with the aim of entering the field of acute blood purification therapy for conditions such as sepsis. In May 2023, we were granted approval by the Pharmaceuticals and Medical Devices Agency (PMDA). We will continue investing in a manufacturing and sales structure to achieve market launch in the near future.

### Growth strategy

The Life Science Division is tackling innovation by generating new chemical reactions, combining the cutting-edge technologies that Toyobo has built up in the medical treatment, medicine, and pharmaceutical fields. As technologies and products related to medicine cannot be supplied without production structures that

meet strict standards, we are constructing a leading world-class quality management system (QMS) along with structures for drug manufacturing management and quality control standards (GMP). To deliver peace of mind and smiles to people worldwide, we have put forth a business policy of seeking to maximize future value.

Nearly all of the main products of the bio business are used in clinical testing, but its product groups are largely unrelated to each

other. Accordingly, we are working to concentrate resources in the field of epidemiology, establish the Toyobo brand in the infectious disease testing market, and provide value through one-stop solutions for infectious disease.

In the medical materials business, we are focused on the development of applications other than membranes for dialysis, including acute blood purification membranes and process separation membranes that take our strengths in hollow fiber membrane manufacturing technology as their starting point. In the field of process separation membranes in particular, we have begun supplying products to major overseas vendors and are engaged in sales promotions toward major manufacturers in every market. We will also focus on our Bonarc® bone regeneration-inducing materials in the dental area, constructing a stable supply structure to contribute to new dental treatments.

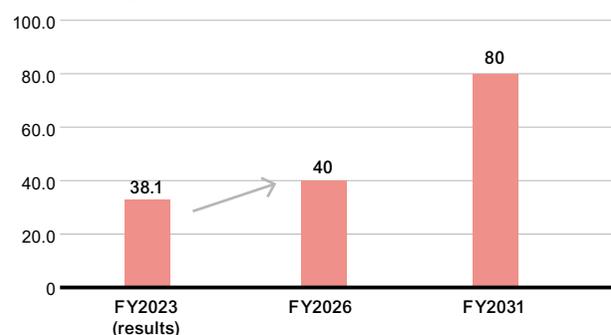
### Realizing sustainable growth

This division is active in the areas of diagnosis and treatment in the patient journey. While these areas largely go unseen by the general public, they make great contributions to health and treatment for people around the world. As one of the social issues in Sustainable Vision 2030, we are focusing on "a healthy lifestyle and health care." Our people involved in this business work with great pride.

To make a greater contribution to society by providing higher-performance products to the clinical testing market in the diagnostic area, we are tackling two targets in the bio business: A yearly 10 million tests that contribute through the provision of diagnostic drugs for infectious diseases, and a 30% market share in raw materials for biochemical tests, etc.

In the medical materials business, we will take advantage of our world-class hollow fiber development and manufacturing technologies, as well as our materials development capabilities, to expand into the area of treatment, thereby contributing to society through products that medical professionals and patients can use with confidence.

Net sales target of the life science business (¥bn)



Integrated production plant for dialyzers

## CSV examples

## Life Science

**Contributing to measures against unknown infectious and other diseases that threaten humanity  
GENECUBE® fully automated gene analysis system for PCR testing, and specialized reagents**

**Toshihiro Kuroita**

 General Manager  
Biotechnology Operating Department

Toyobo developed the GENECUBE® fully automated gene analysis system in 2011. The system's combination of fast-acting DNA amplification PCR enzyme KOD® DNA polymerase with a high-speed temperature control system is able to return results as quickly as 25 minutes from the start of measurement. As COVID-19 began running rampant across the globe in 2020, we leveraged our experience in the development of enzymes to accelerate development of PCR testing drugs for SARS-CoV-2 tests, receiving regulatory approval in July of that year. At present, over 300 GENECUBE® units have been adopted by medical institutions in Japan, where they contribute to society through use in daily testing.

About 70 years ago, Toyobo undertook the development of technology using microorganisms to treat effluent generated from the manufacturing of pulp used as a raw material for rayon. We also investigated the potential for industrial use of the enzymes created in the cells of microorganisms, and succeeded in applying the enzymes to diagnostic drugs. Expanding the types of enzymes, about 40 years ago we moved into the field of genetic research reagents, focusing on restriction enzymes for genetic engineering. Reagents using the KOD® DNA polymerase PCR enzyme developed by our company, collected from unique microorganisms inhabiting the undersea volcanic craters of Kodakara-jima Island in Kagoshima Prefecture, demonstrate a particularly fast DNA amplification rate and accurate replication. This has led to the reagents' use in genetic diagnosis and many other applications. Today, enzyme technologies have become core technologies in the life science business.

Unknown infectious diseases and other diseases that threaten humanity are expected to occur again in the future. By providing higher-performance products to clinical testing and other markets, we will contribute to the health of people around the world and to greater efficiency in treatment.



GENECUBE® fully automated gene analysis system

**Contributing to both patients and the earth through high permeability  
Cellulose-derived artificial kidney hollow fiber membrane unique to Toyobo**

**Kimihiro Mabuchi**

 General Manager  
Medical Materials Operating Department

The life science business's products are involved in the diagnosis and treatment of diseases, contributing to patients and society. Hollow fiber membranes are a core product of the business. Since the late 1970s, we have engaged in development of hollow fiber membranes for seawater desalination. We developed artificial kidney hollow fiber membranes as one of the applications and launched full-scale production in 1984. For four decades years since then, we have provided artificial kidney hollow fiber membranes for ever-increasing numbers of dialysis patients. The product features two main strengths. First, it boasts outstanding waste removal performance with little change over time during dialysis, thanks to our proprietary film-forming technology. Second, it features outstanding biocompatibility, with few cases of allergies. While general dialysis membranes are made from petroleum-derived materials, our cellulose triacetate (CTA) membrane uses natural cellulose from cotton as its starting material. This confers the advantage of very few patients experiencing allergic reactions during treatment due to conversion of hydroxy groups that affect patients to acetate. Our precise control of the membrane surface further prevents clogging and thus a lower likelihood of pressure fluctuations during dialysis, letting patients undergo treatment with confidence.

We are now working with NIPRO Corporation to build a new plant capable of integrated production that spans hollow fiber manufacturing to processing into dialyzers (filtration devices) and commercialization, with the start of operation scheduled for July 2024.

We have also extended our film-forming technology to other treatments and developed concentrated ascites reinfusion therapy (CART) membranes in 2020. These membranes see application in treatment that filters ascites accumulated due to conditions such as cancer and cirrhosis of the liver, then collects beneficial proteins with a concentrator and returns them to the patient's body. We are also advancing development of acute blood purification membranes for patients with conditions including sepsis, with delivery to patients planned for fiscal 2024.

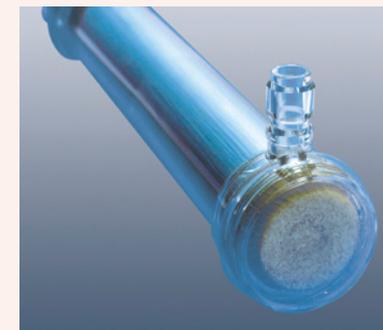


Illustration of Dialyzer using Toyobo's CTA membrane

# Environmental and Functional Materials

## Contributing to solving the world's issues through highly functional materials



### Chikao Morishige

Representative Director & Co-COO  
 Head of Environmental and Functional Materials Division  
 President & Representative Director  
 CEO  
 TOYOBO MC Corporation

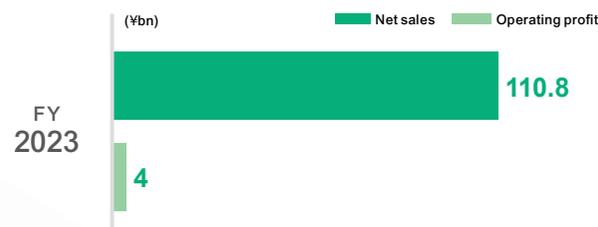
### The strengths of Toyobo

- A new corporate body created through a functional materials manufacturer and a general trading company
- Uniqueness of technology, development capabilities, responsiveness, and ability to comprehend needs
- Global expandability leveraging our network of overseas sites and wide-ranging points of customer contact

### Opportunities and risks

- |               |   |
|---------------|---|
| Opportunities | <ul style="list-style-type: none"> <li>• The global trend toward a circular society and carbon neutrality (holding of many technologies)</li> <li>• Overseas expansion through co-management with a general trading company</li> </ul>  |
| Risks         | <ul style="list-style-type: none"> <li>• Soaring costs of raw materials and fuels and increase in procurement risks</li> <li>• Alliances between textile and chemical manufacturers</li> <li>• Intensification of market competition due to significant changes in business conditions</li> </ul> |

### Net sales and operating profit (¥billion)



### Business overview in fiscal 2023

In fiscal 2023, the final year of financial results under the previous segment categories of Toyobo group, soaring prices of raw materials and fuels and other significant changes in business conditions yielded severe results.

In the environmental solution business, sales of VOC recovery equipment for lithium-ion battery (LiB) separator plants and replacement elements were strong under growing demand for LiBs amid global adoption of electric vehicles (EVs). Non-woven materials struggled as revisions of product prices were unable to keep up with increases in prices of raw materials and fuels. In particular, the business was unable to effect price pass-through in products for civil engineering and construction while quantities did not recover in automotive-related products, resulting in an operating loss. We plan to advance reforms including a review of production capacity. Sales remained strong for high-performance ZYLON® fiber, primarily for architectural reinforcement and bicycle tire applications. Sales of IZANAS® remained strong, primarily for fishing line applications.

As a result, net sales in this segment were ¥110.8 billion and operating profit was ¥4 billion (results for new segment).

### Start of a new company

TOYOBO MC Corporation began operation in April 2023 as a joint venture between our company and Mitsubishi Corporation. Our aim is to grow the environmental and functional materials businesses shouldered by the new company as a third pillar of the Toyobo group, alongside the film business and life science business.

The businesses cover many functional, cutting-edge products based on Toyobo's proprietary technologies, including functional resins and environmental solution systems. Looking back, however, net sales of these have been sluggish in terms of growth, with overseas expansion in particular presenting challenges. In response, we made the decision to create a new "manufacturer + general trading company" framework, in order to grow the business through Toyobo's commitment to technology combined with the overseas expansion and marketing capabilities of Mitsubishi Corporation.

From the day the business launched, we began efforts to

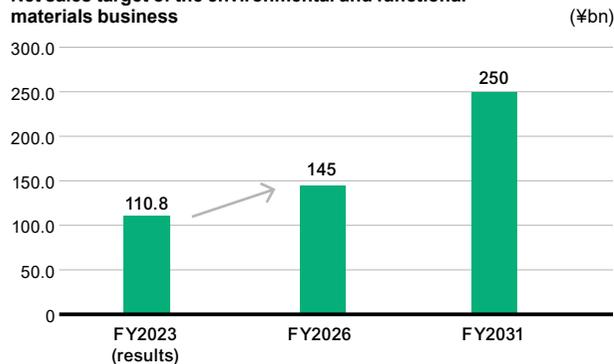
## Environmental and Functional Materials

enhance the solidarity of the employees. The initiatives have included briefings on the Medium-Term Management Plan (MTP); training camps for managers; Medium-Term Management Plan caravans (dialogues with top management) for three divisions, domestic and overseas workplaces, and affiliated companies; and dialogues with vice presidents.

### Growth strategy

To achieve target sales of ¥600 billion for the Toyobo group in fiscal 2031 as set out in Sustainable Vision 2030, we believe that the achievements of the Environmental and Functional Materials Division will be instrumental. In this business, we are aiming for net sales of ¥250 billion in fiscal 2031, with ¥145 billion in fiscal 2026, the final year of the Medium-Term Management Plan. To achieve this high target, we will strategically roll out initiatives that take a bird's-eye view of the materials value chain and the industry overall. Specifically, we are tackling individual businesses divided into "growth," "revenue enhancement," and "business reform" categories, and, through fiscal 2026, are making efforts aimed at expanding applications in existing businesses while leveraging the information

Net sales target of the environmental and functional materials business



network of Mitsubishi Corporation. From fiscal 2026 onward, we will broaden our development of new technologies to meet new needs and speed the cycle overall, while advancing M&A and corporate alliances.

This growth strategy represents a major challenge for Toyobo group. We are committed to achieving significant business transformation in terms of three points: Global penetration and expansion of our customer base which has been centered on Japanese companies in Japan and overseas, acceleration of our development cycle, and enhancement of production efficiency. Positive evaluation from our customers will be indispensable in achieving this. We intend to grow TOYOBO MC Corporation into a company that customers can trust to create things in response to requests.



VOC recovery equipment

### Future initiatives

Among the five social issues named in Sustainable Vision 2030, we recognize that "a decarbonized and circular society" and "clean water areas, air, and soil, and the preservation of biodiversity" in particular involve aspects to be shouldered by this business.

Within its Vision of "solving the world's issues through highly functional materials," TOYOBO MC Corporation has put forth three matters to address as its Mission: (1) Ceaselessly transforming itself, (2) Connecting material technologies to future needs, and (3) Engaging in co-creation to solve social issues. On this foundation, the company will make every effort to enhance its corporate value by solving social issues.

Materials that achieve lighter weight and greater functionality in the field of mobility, along with components and materials required for flexible printed circuits (FPCs) and for the LiBs vital to the shift to EVs, are the core products of TOYOBO MC Corporation. In the environmental field, the company will be able to ably leverage aqua membrane technologies and effluent treatment technologies in LiB manufacturing, contributing to the effective use of water and other resources and to the reduction of environmental impacts. Osmotic power generation using aqua membranes, now at the stage of practical application in Denmark, is considered highly promising for deploying high-performance fiber in offshore wind power generation. These are technologies that will contribute greatly to carbon neutrality. The business's products bring together elements that can make general contributions to the environment despite their differing scopes. We believe that we will be able to expand the business on the back of worldwide megatrends.

## CSV examples

## Environmental and Functional Materials

### Contributing to enhanced performance and safety in lithium-ion batteries HARDLEN® sustainable adhesive



**Kenji Shiga**

Manager  
TOYOBO MC Corporation

The appearance of diverse electronic devices and the accelerated development of electric vehicles (EVs) are spurring ever greater demand for lithium-ion batteries (LiBs). The electrolytes in LiBs must be tightly sealed to prevent internal leaks. As the batteries themselves become hot, however, high heat resistance is also required for sealing materials and adhesives. Impurities must be thoroughly removed, as their presence in the materials used in LiBs can result in degradation of battery performance and in fires. The HARDLEN® adhesion promoter for polyolefin handled by TOYOBO MC Corporation is an adhesive that features excellent adhesion to polypropylene (PP) resin. With its heat resistance enhanced through the application of maleic anhydride modification technology, it has been adopted as an adhesive for LiB sealing materials. The company achieved supply to customers from an early stage of the growing demand for LiBs thanks to its one-of-a-kind technologies and manufacturing processes for removal of impurities, and boasts a high market share even now.

These technologies originate in the company's textile dyeing technologies. About 50 years ago, the resin known as PP faced a challenge in that while it was light and convenient, it did not dissolve in organic solvents and was thus difficult to process and dye. Toyo Kasei Kogyo Co., Ltd.\* developed a technology to chlorinate PP, dissolve it in solvent, and dye it. The company also introduced maleic anhydride modification technology that enables precise modification of the chlorinated PP, for free control over its physical properties. HARDLEN® which is able to freely bond PP to other polymers, has won strong approval in the marketplace and has grown its market share primarily in automotive coating applications. As a further application, the company developed the above-mentioned adhesive for LiB sealing materials and has been boosting production since 2017.

LiBs are indispensable not only for EVs but also for renewable energy storage batteries, robots, IoT devices, and more. The stable supply of HARDLEN® which aids battery performance and safety, will contribute to the evolution and advancement of electronic devices.



New HARDLEN® manufacturing facility at the Takasago Plant

\*Merged into TOYOBO CO., LTD. in 2010

### Helping to bring on the 6G communication era HARDLEN® leverages the strength of low dielectric properties

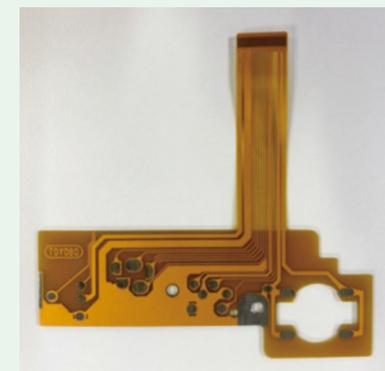


**Koichi Sakamoto**

TOYOBO MC Corporation

Toyobo's maleic anhydride modification technology and impurity removal production technology are both without rival. Making use of these technologies, HARDLEN® boasts a strong advantage in the marketplace. We are currently conducting research and development into new applications. The terms "5G" and "6G" are commonly heard in the context of next-generation communication systems as an era of ultra-high speed, ultra-low latency, and massively simultaneous connections rapidly approaches. Technical hurdles remain, however, including those of materials. As an example, 6G makes use of even higher frequency electromagnetic waves than 5G does, but signal attenuation and delay problems arise with the use of current materials. Prevention of these problems demands materials with lower dielectric constants for use in components such as antennas. The key to technological innovation in this area is our company's impurity removal production technology. Adhesives designed around HARDLEN® are able to achieve a low dielectric constant. We are already supplying our low dielectric adhesives to printed circuit board material manufacturers in the Asian region, and our development unit is rushing to develop ultra-low dielectric adhesives for 6G that leverage the strengths of HARDLEN®.

Multiple sensors and radar systems are also used in autonomous driving systems and factory automation systems, which are expected to proliferate in the future. As high speed, high-capacity, and stable communication infrastructure is indispensable for the safety of these systems, low dielectric properties are demanded of the adhesives used in this infrastructure. Under the belief that our business will see use in many industrial and lifestyle scenarios and that it can broadly contribute to the safety and security of society, we undertake our work with enthusiasm every day.



Circuit board using HARDLEN®

## Feature

### Launch of TOYOBO MC Corporation

TOYOBO MC Corporation (TMC), established by Toyobo and Mitsubishi Corporation as a new joint venture to plan, develop, manufacture, and sell functional materials, began operations on April 1, 2023. We spoke about TMC's growth strategy with vice presidents from both parent companies, who have been involved in the new company's launch from the preparation stage onward.

#### The road to the launch of a new company

The fusion of the two companies will create a stronger, more interesting company

**Fujii** I was involved in preparations for the company for about two years from the start of the project. From 2022, I served as the officer in charge of establishing a new company. During the process, I had many discussions with Mitsubishi Corporation. What I think connected the two companies, in a word, is fate.

Toyobo's environmental and functional materials business, which the new company is succeeding, is an area that enjoys cutting-edge technology, yet has not been able to grow significantly. I sensed a risk that growth could become even more problematic for the business during a phase of rising management costs for reasons such as environmental response. I wondered whether insufficient marketing capabilities in Toyobo, especially in terms of overseas marketing and deployment, might underlie the inability to significantly expand the businesses. If it were a



**Juro Baba**

Executive Vice-president & Representative Director, COO  
Controlling Supervisor of Portfolio Management  
TOYOBO MC Corporation

#### Dialogue



**Naoki Fujii**

Director, Vice President, Executive Officer,  
Assistant to the President, Special Mission Officer, CCO  
TOYOBO MC Corporation



matter of just one business, working with manufacturers could yield greater synergy. However, transferring 12 businesses and growing them significantly definitely requires comprehensive strengths. The partner who offered those strengths was Mitsubishi Corporation.

**Baba** I think there are two main things expected of Mitsubishi Corporation.

One is marketing, a traditional strength of trading companies. Mitsubishi Corporation has enormous contact area in regions and industries around the world, which we will leverage to increase opportunities for entry into customer bases, regions, and markets that have eluded Toyobo so far.

Another expectation is for the knowledge and experience gained from sending management teams to about 1,700 companies in which Mitsubishi Corporation has invested. Incorporating the good parts of the company's problem-solving know-how, including technical support, overseas regulatory compliance, and governance measures, into TMC should enable a stronger, more interesting company.

**Fujii** Mitsubishi Corporation has very compelling functions and assets, including a 110-site network, global information capabilities, the intelligence functions to analyze that information, and planning capabilities. Mitsubishi Corporation has also been investing heavily in carbon neutrality, and is developing a lot of clean energy with a focus on wind power generation. I believe that this will make considerable contributions to expanded use of Toyobo's energy-related materials, as well as to the advance of energy conversion at production sites.

Trough our discussions, I've felt a difference between two companies in terms of sense of speed and persistence, a weak point for Toyobo. This sort of cross-cultural integration itself is a

major factor in growth. I have expectations that growth opportunities for human resources, including experience at overseas sites, will broaden.

#### The strengths of TOYOBO MC Corporation

Meeting the needs of society with technology, information, and planning capabilities

**Baba** TMC has already announced its medium- to long-term management targets. Approaching those high targets will require growing existing customers while also cutting into new customers and markets not yet reached. Decarbonization has become a large movement over the past few years, and we've arrived at an era that demands a change from the passive environmental response of the past to an aggressive environmental response. Toyobo has many materials that are needed now, not only in Japan but across the world. These include engineering plastic materials that contribute to weight reduction in electric vehicles (EVs) and low dielectric adhesive raw materials that are required for the advance of digitalization. In talks with several companies before the establishment of TMC, I heard many times that Toyobo is a company that has the creation capabilities to properly meet customers' detailed demands.

**Fujii** We had discussions with Mitsubishi Corporation about how we want to make TMC a company with technology at its core. Although the company's materials all contribute in different forms, they all hold the potential to be environmentally conscious. In the coming era of providing solutions rather than materials themselves, it will be important to use materials and

technologies to solve the problems customers face. I think that if we can also uncover and suggest issues that customers are not aware of, we can make even greater contributions. I believe that we'll be able to achieve this by combining the strong technical capabilities of

Toyobo with the high-level information and planning capabilities of Mitsubishi Corporation.

**Baba** Mitsubishi Corporation has continued to think about where the world's needs lie, and what we can connect, and how, in order to address those. As long as we can learn where the needs are that call for TMC, we can consider what to make and then execute on that, which is Toyobo's area of expertise. This fusion is our greatest strength.

As an example, even as a circular society advances, there are still many plastics that are thrown away without recycling. To recycle these, their materials must be recyclable to begin with. It is also important to create mechanisms for the recycling of these materials. If we can participate in the creation of regulations and rules for countries and industries to create such social mechanisms, and propose materials to customers, I think that would be really interesting.

## Reviewing organizational design

### Going beyond the conventional boundaries of materials manufacturers

**Fujii** In the organizational design of TMC, I thought it would be good to review our organizations so far. In Toyobo, the growth potential of individual businesses reached limits because of silos created in organizations under the vertical divisions of the business division structure. I thought that we should first change these vertical divisions.

**Baba** Right. I think that the business division structure, with businesses subdivided and with sales, production, and development integrated, functioned extremely efficiently in terms of quickly responding to customers'

needs. Since the 1990s in particular, with no large new products appearing and sales stagnant, the company overcame difficult times through solid earning in small units.

However, looking at what's important in a phase where the company aims for further growth, I think there are two things. The first is bold allocation of management resources. When vertical division is strong, maximizing its own return becomes the goal for an individual organization, which leads to the encircling of human resources and funds. Taking down such walls and creating a functional division structure at TMC, capable of making concentrated shifts of people and funds, was a major decision.

The other important thing is the achievement of co-creation that goes beyond businesses and products. Until now, cooperation among business departments has been weak, and we've been unable to make multifaceted responses even when potential arises to provide varied products and solutions. As the needs of the world become increasingly complex, solving problems through a single product will likely become difficult. A mindset of proposing solutions that combine several businesses or different products, or of going horizontal and introducing other business divisions depending on the issue, will be important.

As information sharing is the key to functional organizations, to address adverse effects such as increased difficulty in communicating, we established strategic planning departments at three functional divisions to facilitate information sharing and operations. These departments shoulder a big role in achieving cooperation among divisions.

**Fujii** There is no correct answer to the question of what form organizations should take. The answer naturally changes according to goals and strategy. With the new company, I expect that a lot of

things will come to light through the change to function-specific organizations.

## A wonderful fusion

### A shiny new company with a one-of-a-kind corporate culture

**Baba** I was surprised that the two companies, which both have long histories, share a common corporate philosophy of viewing contribution to a prosperous society as the purpose of their business activities, going back to our "Jun-Ri-Soku-Yu" and Mitsubishi Corporation's "The Three Corporate Principles," corporate philosophies set by our companies' respective founders in the Meiji era. I feel that, flowing beneath, there was something very common to both companies. In terms of work, however, there's a difference akin to that of hunting people versus agricultural people. There's a stark contrast between Toyobo, which advances matters carefully and accurately to avoid any mistake, and Mitsubishi Corporation, which tends to first take action and think on the run. With those completely different corporate cultures coming together, I want to see the good parts of each merge, to create a company with a new culture not seen before.

**Fujii** Yes. I think it's a fusion of dissimilar things. One goal of TMC is enhancing the mobility of people. This may be a brash thought, but I want to implement human resource development that takes a step forward to let employees grow through diverse experiences, by means such as creation of opportunities for inter-company learning that includes Mitsubishi Corporation too, rather than interaction within TMC alone. Creating a shiny, new company with a wonderful corporate culture is what I see as my biggest mission as a vice president.



### Juro Baba

April 1990  
September 2001  
April 2013  
April 2022  
July 2022

Joined Mitsubishi Corporation  
Mitsubishi Corporation (Americas)  
Corporate Planning Department  
Appointed Executive Officer  
Senior Vice President  
Special Appointments  
General Manager to Industrial Materials  
Group CEO

### Naoki Fujii

April 1987  
November 2007  
June 2011  
April 2015  
April 2018  
April 2021

Joined TOYOBO CO., LTD.  
General Manager, Procurement Department  
General Manager, Planning and Management Functional Materials  
Manager, Iwakuni Production Center  
Manager, Corporate Planning Department  
Appointed Executive Officer



# Functional Textiles and Trading

## Executing business portfolio reform to arrive at what our business should be

### The strengths of Toyobo

- Know-how for deployment of biodegradable fibers, developed as a synthetic fiber manufacturer, to airbags
- A product lineup friendly to people and the earth
- Polymerization and modification technology developed as Japan's first acrylic fiber manufacturer

### Opportunities and risks

#### Opportunities

- Expansion of business opportunities through replacement with environmental materials (biodegradation and recycling)
- Restructuring of the environmental materials industry, strengthening of corporate constitution through alliances, and expansion of opportunities

#### Risks

- Soaring prices due to monopolization and discontinuation of production of biodegradable, recyclable, and other small-lot raw materials
- Risk of acceleration of business closures by domestic subcontractors in the apparel industry, and risk in securing labor in plants

### Business overview in fiscal 2023

In this business, we are making efforts to carry out a business reform master plan for arriving at what our business portfolio should be, based on the 2025 Medium-Term Management Plan.

In fiscal 2023, businesses were significantly affected by soaring prices of raw materials and fuels, with exchange rate factors caused by sharp depreciation of the yen also having a negative impact. Amid this, sales and profit were led by thobe, traditional Middle Eastern apparel. We were able to pass along nearly all of the increase in raw material prices but struggled significantly in passing along fuel prices, with the result that performance declined other than in TOYOBO STC CO., LTD.

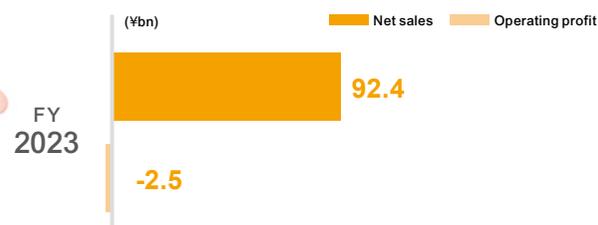
As a result, net sales in this segment were ¥92.4 billion and operating profit was - ¥2.5 billion (results for new segment).

With the exception of cost increase factors, progress was made according to schedule in addressing issues in each business. We expect that exchange rate impacts will be mitigated through new contracts.

### Shigeo Nishiyama

Senior Managing Executive Officer  
Head of Functional Textiles and Trading Division

### Net sales and operating profit (¥billion)



Thobe, traditional Middle Eastern apparel



## Functional Textiles and Trading

### Business strategy

Under its vision of creating small comfortable changes in living through textile technologies, the business is working to develop and commercialize distinctive technologies that find use in varied lifestyle scenarios. The division's business is diverse, covering many products related to everyday living. To solve users' concerns and issues, we intend to leverage our technical and development capabilities and use trading company functions to bring together wide-ranging knowledge and skills, then commercialize and globally deploy these. We will abandon the idea of continuing through our own efforts, and will enhance our strategies through alliances with other companies and other industries, including industry restructuring. With regard to the social issues noted in Sustainable Vision 2030, we are strengthening our initiatives related to "employee well-being and human rights in the supply chain" and "a decarbonized and circular society" in particular.

Based on our master plan, we are working to achieve early profitability, prioritizing "withdrawal from unprofitable businesses and products," "optimization of production scale and personnel," "pass-through pricing to address cost increases," and other items in order to earn an appropriate marginal profit rate in each business.

We entered the airbag business through non-coated fabrics. We also manufacture silicone coated fabrics at present, but in the recycling society of the future, non-coated fabrics that do not require removal of silicone will grow in importance. Our know-how in the utilization and manufacturing of biodegradable fibers is also a strength. We are steadily carrying out our roadmap for achieving profitability and are moving forward with negotiations on base price revision, integration of product numbering, proper allocation, and review of shared expenses. Toyobo Indorama Advanced Fibers Co., Ltd. (TIAF), a joint venture with Indorama Polyester Industries PCL (IPI) to manufacture airbag yarn, began operation in October 2022. We are working to achieve stable operation as quickly as possible.

The functional textile business is carrying out improvements to its human capital structure, with the start of a new structure scheduled for March 2024. Together with this, we are also undertaking transfer of production technology to Toyobo Textile

(Malaysia) SDN.BHD.

In the textile business, our founding industry in which we have accumulated over 140 years of technologies, we have carried out integration and reorganization of group companies with the goal of enhanced profitability and asset efficiency, and launched TOYOBO TEXTILE CO., LTD. in April 2022. Through the consolidation of three plants and a return to profit through integrated business operations at overseas sites, we aim to establish a foundation for profitability. The greatest advantage of woolen menswear company Miyukikeori Co., Ltd. is its status as a luxury brand capable of integrated production that spans yarn, weaving, processing, and sewing. The company is also developing the world's finest, lightest class of fabrics using ultra-strong yarn (Manerd® wool technical hybrid yarn). While achieving stable management through enhanced efficiency in the textile business, we are engaging in selection and concentration of business partners (moving away from department stores and toward high value-added apparel).

Responding to a sharp rise in construction steel materials and construction-related costs, acrylic fiber company Japan Exlan Co., Ltd. conducted a review of its original revitalization plan, and has undertaken a new start. The company will shift to OEM for acrylic raw cotton, improve the efficiency of its production processes, and carry out sales strategies and sales expansion measures that include external collaboration.

The trading company TOYOBO STC CO., LTD. will focus on the expansion of new commercial flows with Toyobo group companies and on expansion of proprietary technical products.



Completion of a nylon yarn production plant for TIAF's airbags on the grounds of IPI

## CSV examples

### Contributing to the advancement of the domestic recycling market through our technology Taking on the upcycling of apparel



**Eiichi Shimizu**

President  
TOYOBO TEXTILE CO., LTD.

While the Toyobo group has established a variety of recycling technologies, recycling related to apparel has been limited to the reuse of fiber scrap in plants. One reason for this is that the development of a domestic recycling market in the field of apparel is still a matter for the future. A considerable problem has existed in that value creation supporting both the economy and the environment cannot be achieved without the creation of recycled clothing with greater appeal to consumers. However, unlike general apparel manufacturers, our textile business performs integrated production that spans fiber to yarn making and sewing. Accordingly, operating a recycling loop throughout the supply chain will enable higher-value recycling. TOYOBO TEXTILE CO., LTD. is undertaking full-scale upcycling of apparel, seeking to create a market by providing high-quality and compelling recycled products in Japan.



Upcycled apparel products (hangers made from crushed and pelletized fiber scrap)

## CSV examples

## Functional Textiles and Trading

### Contributing to the protection of lives and the environment Successful development of airbag fabric technologies



**Tadao Kuroki**  
General Manager  
Airbag Operating Department

For its heat resistance and other merits, nylon 66 has been widely adopted as airbag fabric that protect lives in emergencies while driving. However, the material faces issues including shortages of supply and difficulty in recycling, leading to increased calls for polyester fabrics.

Compared to nylon, the use of polyester as a raw material is expected to roughly halve CO<sub>2</sub> emitted in the polymer resin production process. A high percentage of recycled polyester materials can also be used. Our company has undertaken the development of polyester airbag fabric that features outstanding environmental compatibility. The material achieves heat resistance and storability on par with nylon 66, and was adopted by automobile manufacturers in 2022.

We will continue advancing technological innovations aimed at creating “the solutions needed by people and the earth.”



Varied types of airbags to secure greater safety

### Contributing to the prevention of damage to health and reduction of environmental impacts Development of adhesive-free waterproof sheets



**Masahide Takemoto**  
President  
TOYOBO STC CO., LTD.

The urethane coating film waterproofing and ventilation buffer method, a standard method used in rooftop waterproofing, makes use of conventional chloroprene adhesives. This entails a major issue in atmospheric dispersion of toluene, xylene, and other chemicals contained in the adhesives. As these chemical substances are causes of damage to site workers' health and photochemical smog, posing a concern about global warming impacts due to chemical changes in the smog, it is hoped that use of the substances will be reduced or discontinued.

New asphalt self-adhering ventilation buffer sheets developed by TOYOBO STC CO., LTD. can be directly affixed to rooftops with no use of adhesives. This alleviates concerns over air pollution and significantly reduces construction work man-hours as well, enabling reduction of both environmental impacts and construction costs compared to conventional products. Through the development of industrial materials that take the global environment into consideration, we will continue contributing to both business and the environment.



Applying waterproof material coating to ventilation buffer sheets

### Contributing to the reduction of environmental impacts through high energy efficiency Joint development of energy-saving air conditioner components and materials together with Panasonic



**Tatsuaki Sumitani**  
Director  
Japan Exlan Co., Ltd.

Japan Exlan Co., Ltd. has developed a desiccant rotor using paper coated with fine particles that absorb and desorb moisture through acrylic material. Heat pump-type air conditioning is typically used in buildings and plants. Absorbing moisture from air prior to intake by the heat pump, followed by contact with the refrigerant, eliminates discharge of drain water and enables highly energy-efficient cooling. Providing humidity in winter also enables efficient heating, achieving significant energy savings compared to conventional heat pump-based air conditioning.

Panasonic evaluated the desiccant rotor, which features quick regeneration at lower temperatures and with low energy usage and adopted for use in its air conditioners in 2022. As a result of achieving industry-leading energy-saving performance through joint system design by Panasonic Corporation and our company, Panasonic Corporation was a recipient of the Energy Conservation Grand Prize in fiscal 2022 and fiscal 2023.



Desiccant rotors adopted for use in Panasonic air conditioners