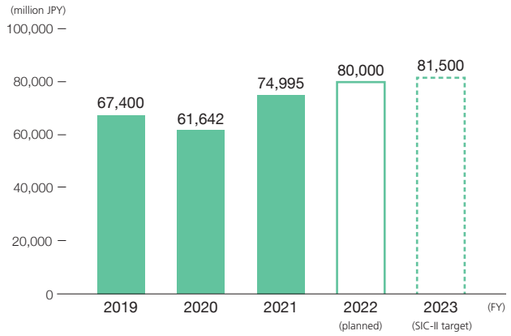
Colorants and Functional Materials Business

Pursuing technologies to achieve colors and functionality,
with organic pigments as the starting point

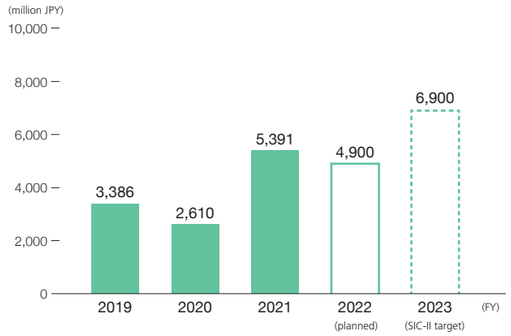
Changes in performance

(As of July 2022)

Net sales



Operating profit



Category	Major products	Major applications
Chemicals	Pigments, pigment dispersions	Printing inks, paints for vehicle, plastic colorants, etc.
High functional chemicals	High functional pigments, pastes for color filter	Resist for color filter of flat panel display (FPD), inks for digital printing
Display materials	Color resist	Color filters for FPD, imaging sensors, etc.
Plastic colorants	Color Masterbatches, Functional Masterbatches, Functional Compounds	Plastic containers, vehicle interior / exterior, OA equipment, electrical appliances, etc.
Developed products and others	Paints for data recording materials, carbon dispersions, inkjet inks	Magnetic tape for data storage, lithium ion batteries, signboards, labels, etc.

SWOT analysis

	《 Positive factors 》	《 Negative factors 》
《 Internal factors 》	• Capable of developing products—from material to finished product—based on dispersal technologies, particle and interface control technologies, and synthesis technologies • Integrated development and production system covering all stages from pigment synthesis to finished product	• Profit structure biased toward only certain product groups • Scale of our operations in the pigments and plastic colorants business is small compared to that of major global manufacturers
《 External factors 》	• Expansion of the renewable energy • Popularization of electric vehicles (EVs) • Reduction in the amount of plastic used and growing needs for environmentally friendly products	• Decline in demand for pigments for printing inks due to acceleration of digitalization • Decline in demand for plastic products, resulting from growing environmental awareness, including awareness of the waste plastic problem

S 〈Strength〉 W 〈Weakness〉 O 〈Opportunity〉 T 〈Threat〉

Management message

Hideki Okaichi
President and Representative Director
Toyocolor Co., Ltd.

FY2021 results

In FY2021, sales and profits increased in spite of soaring raw material prices and supply-related concerns during the second half of the fiscal year affecting all products. Performance of pigments remained sluggish due to a continued decline in demand for printing inks, which are their main application. In plastic colorants, we were able to significantly improve business performance as a result of the recovery from the economic recession caused by the COVID-19 pandemic, steady demand for lifestyle-related products—which have always been one of our key strengths—and the performance of functional masterbatches used in products such as solar cells, etc., which we have been developing for some time. In highly functional chemicals and display materials (used mainly for FPD color filters), although there were impacts such as production adjustments due to the fall in LCD panel prices during the second half of 2021, sales of small and medium-sized panels such as monitors remained strong overall due to stay-home demand resulting from the COVID-19 pandemic. Production of large panels by Chinese manufacturers also increased, and sales remained steady. We were also able to begin supplying CNT dispersions for lithium ion batteries (LiBs) included in developed products to major overseas automobile manufacturers.

Priority measures for FY2022

Accelerate the establishment of the main source of revenue in the growth market

In FY2022, we aim to accelerate the establishment of the main source of revenue in the growth market. In the CNT dispersion business, in order to respond to the rapid growth in demand for LiB materials accompanying the acceleration of EV development, we will utilize the strengths of our production locations in each region the three major automobile markets (China, the United States and Europe) along with Japan, and seek to expand business by targeting mainly manufacturers of high-capacity LiBs.

In materials for color filters of FPD, we aim to expand sales by responding flexibly to development requests—including costs due to the expansion of the Chinese market—through an integrated development and production system encompassing everything from pigment synthesis to paste design and resist inks, which are one of the distinctive characteristics of our business.

In the plastic colorant business, in which we reorganized and consolidated our unprofitable bases last year, we hope to accelerate our response to new markets and new functions such as recycling and biodegradability, in addition to existing markets. In the pigment business, which has been affected by the shrinking of the printing ink market due to the acceleration of digitalization, we will work to break away from our dependency on offset inks as a main application, and reduce costs through innovation with respect to manufacturing methods.

Topics of priority measures

Launch of electrode materials for lithium ion batteries

While the shift from gasoline vehicles to EVs is accelerated around the world, lithium ion batteries (LiB) are the key device attracting attention not only for their use in automobiles but also as a linchpin of the electricity infrastructures of a decarbonized society, to be used in, for example, power storage systems for the stable supply of electricity from solar energy and wind energy. We are seeing demand for the increase of the capacity and the reduced weight, safety and durability of LiBs.

The Toyo Ink Group supplies carbon nanotube (CNT) dispersions as electrode materials for LiBs, created through the application of the Group's technological capabilities in dispersion processing technologies and design of optimal formulations tailored to each user. The addition of a tiny amount of these easy-to-handle, high-purity CNT dispersions enables higher capacity and improved durability of LiBs. In FY2021 they were adopted for use by major overseas automobile manufacturers, resulting in sales of approximately 1.15 billion yen.

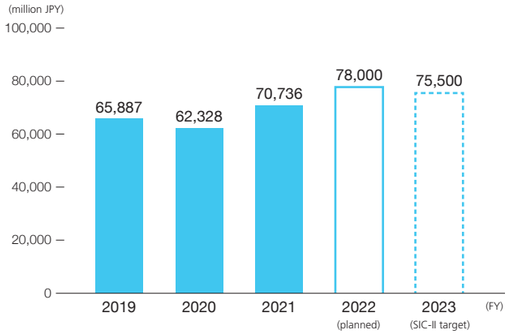
Polymers and Coatings Business

Providing value to diverse markets based on polymers with greater functionality

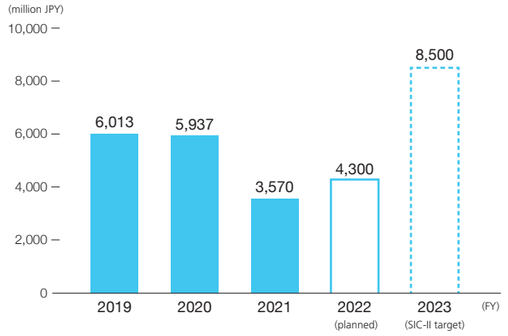
Changes in performance

(As of July 2022)

Net sales



Operating profit



Category	Major products	Major applications
Adhesives	Pressure sensitive adhesives, laminating adhesives, hot-melt adhesives	Packaging films, flat panel display (FPD), bookbindings, body-wrapping labels for PET bottle, etc.
Coating materials	Adhesive tapes, functional film materials for electronics, marking films	Double-sided adhesive tapes, electronic products, signboards and interior / exterior decoration, etc.
Paints and resins	Can coatings, resins, hard coating materials	Beverage cans, food cans, drums, architectural paints, functional films, FPDs, etc.
Developed products and others	Medical products, natural extracts	Transdermal patches, foods, feeds, etc.

SWOT analysis

	《 Positive factors 》	《 Negative factors 》
《 Internal factors 》	• Advanced technological capabilities in precision polymer synthesis, dispersion stabilization, precision coating and processing • Integrated production from self-produced materials (polymers) to adhesive manufacture and coating	• Business earning structure susceptible to fluctuations in raw material prices • Scale of operations and supply capabilities is small compared to that of major global manufacturers
《 External factors 》	• Expansion of new markets as a result of changes in industry structure due to new environmental regulations (5G, EVs, secondary batteries, semiconductors, biotechnology and sensors) • Growth in demand for environmentally friendly products resulting from increasing global environmental awareness	• Toughening of environmental regulations and increasing social demands (abandoning the use of plastics, recycling, solvent emission regulations and CO_2 emission regulations) • Sharply rising raw material prices and difficulty in procuring raw materials • The rejection of materials and fiercer competition resulting from changes in the specifications of smartphones and other electronics products

S 〈Strength〉 W 〈Weakness〉 O 〈Opportunity〉 T 〈Threat〉

Management message

▶ FY2021 results

Sales increased significantly in FY2021 due to the growth of overall sales, both in Japan and overseas. Pressure sensitive adhesives grew significantly due to the expansion of sales of optical products and the incorporation of COVID-19-related demand, such as vaccination tickets. In adhesives, in addition to an increase in shipments of solvent-free adhesives, which are in particularly high demand for use in food packaging, the adoption of products in new areas such as India and Turkey also increased, and sales of exterior adhesives for LiBs also rose. In coating materials, sales of functional films such as electromagnetic shielding films and conductive adhesive sheets have grown as we have captured high global demand for mobile and 5G products. Paints and resins also contributed to the increase in sales, with a rise in shipments of can coatings due to an increase in demand for beer for home consumption.

Toshinori Machida
President and Representative Director
Toyochem Co., Ltd.

At the same time, operating profit declined in spite of cost reductions and product price revisions in response to global turmoil in supply / demand and disruptions to logistics accompanying the COVID-19 pandemic and the rapid increase in prices of raw material prices such as resins and solvents due to the rise in naphtha prices.

▶ Priority measures for FY2022

Increase leading global product lines and reform earnings structure

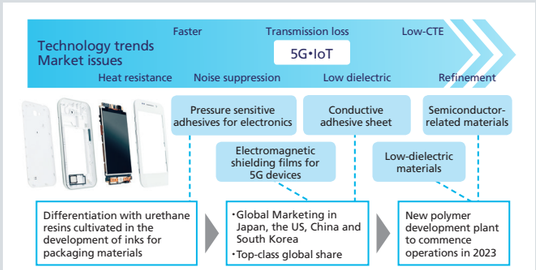
As raw material prices continue to rise, we will push ahead with revisions to appropriate sales prices as a top priority. At the same time, in order to transform our earning structure to one that is less susceptible to fluctuations in raw material prices, we will focus our efforts on reviewing low-profit products and shifting to high value-added products. Specifically, we will take advantage of our strengths in being able to carry out integrated production from self-produced materials such as polymers to adhesive production and coating by continuing to advance the development of global top-ranking product lines including functional films such as 5G-compatible electromagnetic shielding films and conductive adhesive sheets for the mobile devices market, as well as products for markets where future growth is expected, such as secondary batteries and semiconductors.

By taking advantage of environmental regulations and social demands such as reducing CO_2 emissions and abandoning the use of plastics as new opportunities, we will strive to expand our product lineup and increase sales of environmentally friendly products utilizing polymer synthesis technologies—one of the Group's specialties—for applications such as solvent-free products, biomass, biodegradable products, plastic-free and/or plastic reduction-related products (such as FILLHARMO®, a water-based coating agent for paper that can be used in contact with food).

Topics of priority measures

Expansion of electronics-related business

Functional films—one of the products of the coating materials business—are used in many electronic devices, including those produced by major smartphone manufacturers, and we boast a top-class share in the global market for electromagnetic wave shielding films and conductive adhesive sheets for 5G devices. Behind the establishment of this share in the market for functional films are our technological development capabilities in both resin synthesis and dispersion technologies for materials that exhibit electrical characteristics, enabling us to achieve both the necessary heat resistance and flexibility required to produce flexible substrates. In addition, by marketing to major manufacturers in Japan, the United States, China, and South Korea (all major markets in the electronics industry), we believe that we were able to avoid missing any important turning points in technology trends, and make timely proposals.



In the future, we will construct a new polymer development plant in Japan to accelerate further applications in electronic materials and development of materials in the semiconductor field, which demands advanced functionality.

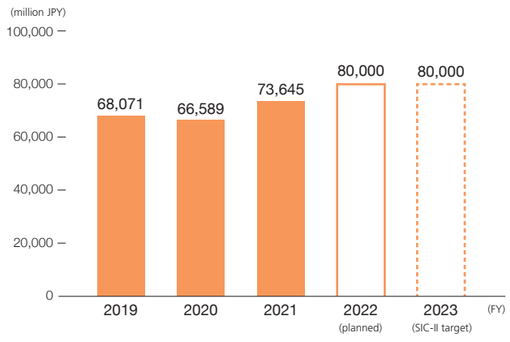
Packaging Materials Business

Providing eco-conscious packaging materials
in view of a product's entire lifecycle

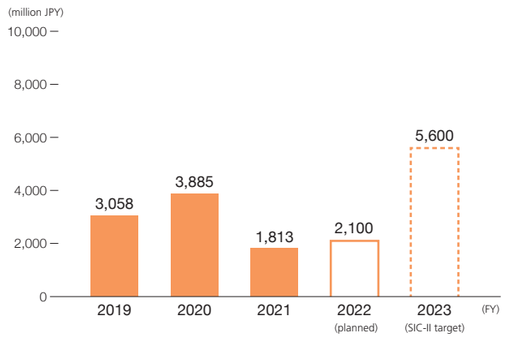
Changes in performance

(As of July 2022)

Net sales



Operating profit



Category	Major products	Major applications
Liquid inks	Gravure inks, flexographic inks	Flexible packaging materials, building materials, corrugated cardboards, labels, paper containers, etc.
Gravure printing systems and prepress	Gravure printing systems, gravure and flexographic plate making	Gravure / flexographic printing, precision plate making for electronics

SWOT analysis

	《 Positive factors 》	《 Negative factors 》
《 Internal factors 》	• Technical capabilities to design and develop pigments, resins, inks, platemaking technologies and laminating adhesives • Printing and training facilities that enable us to produce our own flexible packaging films, and our ability to cater to customers	• Easily impacted by fluctuations in raw material prices • Low-level market presence in Western markets
《 External factors 》	• Population growth in emerging countries and consequent continued growth in overall demand for packaging materials • Changes in the forms and functions demanded of packaging materials as a response to the SDGs and the circular economy, and the shift from plastic to paper and metal	• Trend toward abandoning the use of ink, and adhesives as a response to the SDGs and circular economy • Widespread popularization of recyclable materials and configurations accompanying the movement to eliminate or reduce the use of plastics, and reduce CO_2 emissions

S 〈Strength〉 W 〈Weakness〉 O 〈Opportunity〉 T 〈Threat〉

Management message

FY2021 results

Masato Yanagi
President and Representative Director
Toyo Ink Co., Ltd.

In the packaging materials business, which focuses primarily on gravure inks which are mainly used in food packaging, the shipment volume of biomass inks for lamination—an environmentally friendly product—has almost doubled year on year in Japan, and the ratio of biomass inks to entire laminated inks shipped has now exceeded 50%. Renewals of packages—which had stagnated due to the COVID-19 pandemic—are also gradually increasing, and we are now receiving more requests for conversion to biomass inks.

Although some of the effects of self-imposed restrictions on going out due to the COVID-19 were observed in Japan in FY2021, demand for food packaging—the main application of product use—remained firm, without being significantly affected by the pandemic, and sales grew steadily due to the effect of expanding sales. Recovery from the effects of the COVID-19 pandemic in overseas markets was faster than in Japan, and business performance increased in various regions such as India and Turkey. Both in Japan and overseas, however, profits have been heavily compressed by soaring prices for naphtha and other petrochemical raw materials and rising logistics costs—due to the recovery of demand after the slump caused by the pandemic—resulting in a decrease in income despite an increase in sales.

Priority measures for FY2022

Lead the development of environmentally friendly products and accelerate growth investment in overseas regional markets

Our key advantages among printing ink manufacturers are that we have the technology to manufacture the plates required for printing and the technology to develop laminating adhesives that are indispensable for food packaging with multi-layered structures. We also have our own in-house printing equipment and technical capabilities. This has led to us gaining the trust of many brand owners, and in recent years we have contributed greatly to the development and practical application of products using raw materials with low environmental impact—such as biomass and water-based products—together with brand owners. By leveraging these strengths, we will continue to lead the way in addressing environmental issues in the packaging industry in FY2022. In order to respond to the growth in demand for packaging materials due to population growth in emerging countries, we will make swift concentrated investments in China, India, Turkey and Southeast Asia.

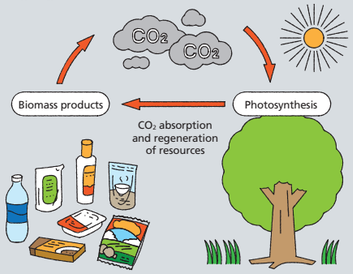
At the same time, raw material prices have soared since last year, and we are proceeding with appropriate revisions to prices. As a fundamental measure for this business, which is susceptible to the influence of raw material prices, however, we will also implement cost reductions such as reducing low-profit products through product integration and by introducing labor-saving equipment.

Topics of priority measures

Biomass inks that contribute to the reduction of CO_2 emissions from package printing

Conventional printing inks use petroleum-derived (fossil-resource derived) raw materials for their constituent resins and solvents. In contrast, Toyo Ink Co., Ltd.'s biomass inks use biomass (renewable, biological materials excluding fossil resources) raw materials. Biomass raw materials are carbon neutral materials that do not increase overall CO_2 emissions even when incinerated because the plants that are the source of these materials absorb CO_2 as they grow.

Our extensive lineup of biomass ink products, including inks for offset printing, screen printing, and package printing, contain 10% to 40% biomass components. They have been certified by the Japan Organics Recycling Association. Demand for biomass inks is increasing year by year, and in FY2021, the ratio of biomass inks to entire laminated inks exceeded 50%. They are used for many printings such as food packaging, convenience store private brand products, and other products.



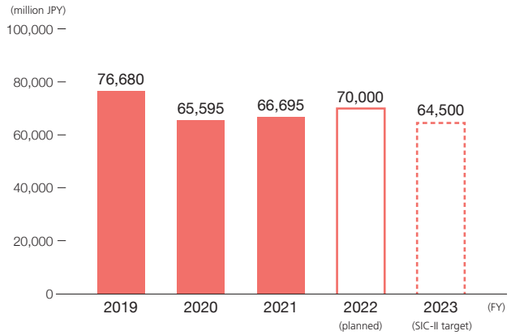
Printing and Information Business

Deploying products in the high-value added printing market featuring environmentally friendly technologies and technologies that enable superior functionality

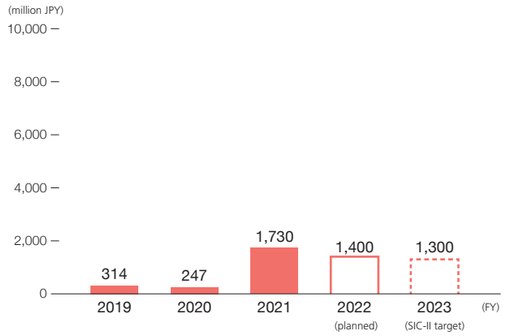
Changes in performance

(As of July 2022)

Net sales



Operating profit



Category	Major products	Major applications
Offset inks	Offset inks, newspaper inks, metal decorative inks, UV curing inks	Flyers, books, magazines, newspapers, stickers / labels, paper containers, beverage cans, food cans, etc.
Printing materials and machinery	Offset printing materials, printing inspection equipment	Offset plate making, printing paper surface inspection, etc.
Developed products and others	Screen inks, others	Packaging, instrument panel for vehicles, printed electronics materials, etc.

SWOT analysis

	《 Positive factors 》	《 Negative factors 》
《 Internal factors 》	• Technical capabilities in formulation, extensive evaluation equipment and validation know-how • Extensive lineup of environmentally friendly products • Top market share in Japan for rotary offset inks and UV curing inks in the commercial printing field • Abundant knowledge, technical and production capabilities in the field of pigments and resins	• Slow implementation of measures to optimize business scale in response to the speed of decline in demand due to digitalization and population decline
《 External factors 》	• Movement to utilize paper in line with the trend of abandoning use of fossil resources and plastics • Accelerating global expansion by advancing the use of information and communication technologies	• Domestic printing industry continues to shrink due to digitalization and population decline and continuing decline in demand for inks • Decline in demand for offset inks due to partial shift to flexographic and inkjet printing methods

S 〈Strength〉 W 〈Weakness〉 O 〈Opportunity〉 T 〈Threat〉

Management message

Masato Yanagi
President and Representative Director
Toyo Ink Co., Ltd.

FY2021 results

In FY2021, the shrinking of the commercial printing market in Japan accelerated. Looking ahead, we believe that the market for general offset inks—such as rotary offset, sheet-fed offset and newspaper inks—will continue to shrink due to progress in digitalization. On the other hand, unlike general offset inks, we believe that the market for functional inks such as UV curing inks and metal decorative inks will continue to grow in the future, since these inks are also used in paper containers, beverage cans and other packaging materials. Functional inks—particularly UV curing inks—performed well both in Japan and overseas, contributing significantly to the increase in sales and income in the Printing and Information business. Until now, the business performance of UV curing inks had deteriorated due to soaring raw material prices, but we are now improving them by reviewing formulations and replacing raw materials with alternatives. Other factors contributing to the increase in sales and income include the rigorous implementation of structural reforms—such as a review of personnel assignments in line with the shrinking market for inks for paper printing—and progress in recovery from the COVID-19 pandemic in overseas markets such as China.

Priority measures for FY2022

Implementation of reforms to a profitable business structure conforming to market environment

The Toyo Ink Group has the top share in offset inks in Japan and possesses a wealth of formulation design technologies, evaluation equipment—such as printing presses—and validation know-how, as well as an extensive lineup of environmentally friendly products. However, the shrinkage of the commercial printing market due to digitalization is steadily progressing. In FY2022 we will continue to implement structural reforms with regard to rotary offset, sheet-fed offset and newspaper inks, and have set the priority measure of building optimal production, logistics and sales systems according to the scale of demand.

At the same time, UV curing inks, metal decorative inks and screen inks—referred to as functional inks—are printing inks that target markets with high added value, which are expected to display growth in the future. In the field of UV curing inks, we aim to expand our sales of environmentally friendly biomass products by leveraging our strengths in resin production. In metal decorating inks, for which the Group has a very high domestic market share, we will accelerate the growth of environmentally friendly products by introducing power / energy-saving ink products to overseas markets.

Topics of priority measures

Focus on functional inks—high-sensitivity UV curing inks and biomass UV curing inks

Although the market for the printing and information business continues to shrink due to the progress of digitalization of information media, there are high hopes in the market for functional inks such as UV curing inks in particular, which are being adopted in many fields due to their instant curing and high coating properties.

In particular, high-sensitivity UV curing inks (including LED-UV curing inks)—which have now become commonplace—were announced for the first time in the world by the Group at the “drupa - International Printing and Media Equipment Exhibition” in 2008. Since then, we have also led the market and boast the world's top market share.

Going forward, with an awareness of the shift toward a decarbonized society, we will engage in active product development efforts to develop biomass UV curing inks, which are considered highly difficult to produce, and expand the range of our product lineup to include paper containers and packaging materials, seals and labels, and cups—all of which relate closely to people’s lives.

LED-UV irradiation device