



Responsible Product

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Green Logistics

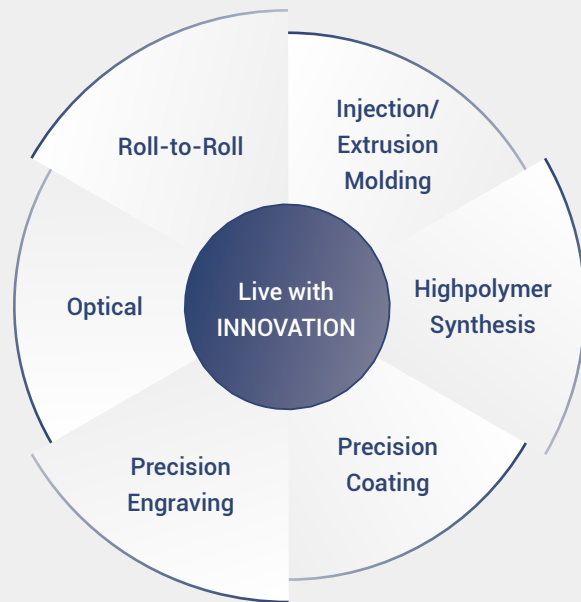
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Product Safety and Marketing Labels

Core Technology and Intellectual Property Management

» Six Main Core Technologies

From optical design and materials R&D to process optimization, after years of development and experience accumulation, we are now owner of two core materials technologies: optical multi-layer film design and polymer synthesis and four process technologies: reel-to-reel, precision engraving, precision coating and injection and extrusion molding.



» Product Manufacturing Process

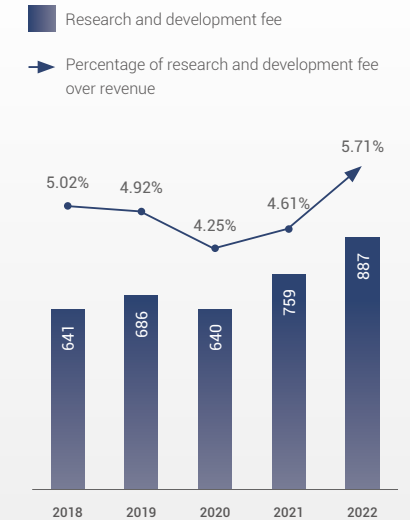
We have 10 ranges of products divided into following categories: display materials, battery materials, healthcare and nursing products, and textiles. After the independent production in five own business locations, functional films and isolation films are shipped to B2B customers, and non-functional films and functional textiles are by nature shipped to B2B customers, dealers, healthcare institutions, or e-commerce platforms. Please refer to our [ESG website](#) for details regarding the corresponding business locations of individual production lines and corresponding manufacturing processes of individual products.

» Intellectual property Management

Intellectual property is a key factor to the sustainable profit of an enterprise. To protect the research and development outcome and technical competitiveness, BenQ Materials actively encourages innovation and self-development. Intellectual property right strategy focuses on the core technologies and integrates the company's technology and product development and planning in priority, in order to continuously promote patent planning, and to protect technologies of high potential and innovative outputs generated during the production and business process through patent planning while implementing effective intellectual property management. BenQ Materials has qualified the Taiwan Intellectual Property Management System (TIPS) Class A certification in 2022, and adopts the systematic method to protect research and development outcomes while maintaining professional and technical competitiveness.



Historical Research and Development Investment Amount and Percentage





Intellectual Property Management Items

1

Establishment of task force: Through cross-department collaboration, the intellectual property management system is improved.

2

Implementation of intellectual property systematic management

3

Utilization of patent technology system: Patent technology trend is provided to the supervisors of technology research and product development units periodically, in order to share technology information and to review the company's strategies.

4

Periodic activation of research and development cycle and internal audit procedure: Through internal audit procedure, the acquisition, maintenance and utilization of intellectual property rights are ensured to be handled according to the regulations of the company.

5

Reward system encouraging employee innovation: Reward system is implemented to encourage employees to transform research and development outcome into intellectual property rights for protection (including patent applications or trade secrets)

6

Revision of employment contracts of employees: In addition to the provision that inventions made during the course of duties are treated as intellectual property rights of the company according to the laws, during the employment period and after resignation, employees are required to bear non-disclosure obligation and other relevant obligations for the intellectual property rights and trade secrets of the company.

7

Implementation of education and training: Relevant intellectual property education and training courses are organized, in order to improve the intellectual property concept and awareness of employees.

» Intellectual Property Management Outcome

From 2000 to December 2022, BenQMaterials has accumulated a total of 1,180 global patent applications and has obtained 770 granted patents. These patents have been filed in major markets and countries such as Taiwan, the United States, the European Union, Japan, mainland China, and India. The achievements of BenQMaterials' intellectual property management have been reported to the sixth board of directors on November 1, 2022.

Patent Outcome	Number of Applications	Number of Certificates Granted
2018 year	33	53
2019 year	46	30
2020 year	63	30
2021 year	44	37
2022 year	39	38

» Collaboration with Industry-Academia for Technological Innovation

In order to continuously enhance its innovative research and development capabilities and product competitiveness, BenQ Materials has actively collaborated and exchanged with domestic academic research institutions. The collaborative partners include the Industrial Technology Research Institute, National Cheng Kung University, National Taiwan University of Science and Technology, and Chang Gung University, all of which possess abundant research and development capabilities. Together, they have engaged in joint projects covering various technological fields such as smart healthcare, solid-state battery material research, material recycling and reuse, and biomedical technology.

In 2022, a total of 11 industry-academia collaboration projects were implemented, with research and development expenses exceeding 12 million NT dollars. The projects have yielded results and led to the filing of three Taiwan invention patents (one of which has been granted: TW1759106), two Chinese patents, and one US patent. For more information on intellectual property management, please refer to the [BenQ Materials official website](#).



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Product Safety and Marketing Labels

Sustainable Design and Innovation of Products

We start the sustainable design and development of products from the product life cycle, from design, manufacture, logistics, and even end-use, maintenance and repair, and scrap. We also combine the concept of circular economy with the design and innovation principles of structure optimization, eco-friendly raw materials, product safety, product packaging material reduction, low-impact elements, and recyclable materials, aiming to reduce the overall environmental impacts of products and create sustainable value.

» Display Materials

Design

Structure optimization	<p>Polarizer:</p> <ul style="list-style-type: none"> By reducing the total thickness of each layer by 30%, we reduce the total materials consumption of polarizers. <p>PDLC Smart Optical Film:</p> <ul style="list-style-type: none"> We produce the industry-thinnest PDLC optical films, only 8–10µm vs. market average at 15–20µm. We also produce the industry-thinnest ITO, only 50µm vs. market average at 188µm.
Better Materials	<p>PDLC Smart Optical Film:</p> <ul style="list-style-type: none"> Currently, our ITO has the industry-best appearance quality and optical coefficient. The series 97/95 have the industry-highest transparency and lowest haze after electrification.
Recyclable Materials	<p>Polarizer:</p> <ul style="list-style-type: none"> hemicals and packaging materials are recyclable for reuse to reduce the waste production of products. (please refer to the Circular Economy section in 5-6)
Low-impact elements	<p>Optical Film:</p> <p>Apart from reducing waste production, thinning the isolation film (indirect material) by 50% and the effective layers (direct material) by 60% can also reduce process electricity consumption to reduce carbon emissions by about 25%.</p> <p>Solvent-free pressure sensitive adhesives (PSA) are used to reduce the oven-drying time and the emission of volatile organic compounds (VOCs) into the atmosphere.</p> <p>Optical Adhesive:</p> <ul style="list-style-type: none"> Solvent-free process: Skip the oven process to reduce electricity consumption and hence carbon emissions; skip acid use to enhance process safety while reducing the emission of hazardous substances in the process.

Product safety	<p>Polarizer:</p> <ul style="list-style-type: none"> Each ingredient and material comply with the RoHS directive. <p>Optical Adhesive:</p> <ul style="list-style-type: none"> Yunlin Tech Plant passed the certification of quality management systems including ISO 9001 (quality) and ISO 14001 (environmental) and IATF 16949 (automotive). <p>PDLC Smart Optical Film:</p> <ul style="list-style-type: none"> Comply with the REACH/RoHS directives and GP regulations.
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Manufacture

High-Performance Manufacture	<p>Functional Film:</p> <ul style="list-style-type: none"> Implement inkjet printers in the rewinding line to enhance effective monthly capacity by 5%. Enhance the speed of the gluing machine from 35m to 38m of the coating line to enhance monthly capacity by 3%. Enhancing inspection exemption rate: Implement the specification optimization project to enhance inspection exemption rate from 69% to 78%. Simplifying operation traffic flow: Increase material dispensers to save daily handling labor by 25 labor hours.
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Logistics

Green Packaging	<p>Polarizer:</p> <ul style="list-style-type: none"> In 2022 the average recycling rate of recyclable cartons and finished product trays was 92.67%, achieving the target. (please refer to 4-3 Green Logistics) Increase product packaging capacity to reduce packaging materials by 1/3. <p>PDLC Smart Optical Film:</p> <ul style="list-style-type: none"> All packaging materials are recyclable for reuse. Based on the shipping record of recyclable packaging materials to dealers (Taiwan), we will ask dealers to recycle the paper reels, plugs, and plastic reels used in the previous shipment in the next shipment. (concentration) Paper reels of packaging materials have passed the green partner (GP) certification.
High-Performance Delivery	<p>Functional Film:</p> <ul style="list-style-type: none"> The 2022 carbon emissions reduced by 97 tCO₂e from 2021 to 3,322 tCO₂e. (please refer to 4-3 Green Logistics) The green logistics policy implemented in 2023 reduces sea transportation expenses, cut the abnormal transportation fees, and increase general sea transportation. Hence, carbon emissions in 2023 tend to reduce from that of 2022. (please refer to 4-3 Green Logistics)



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Use Maintenance and Repair Scrap

Polarizer:

- Reduce the iodine compound in the last row by adjusting dyeing iodine concentration and tensile rate and optimizing the alignment of triiodide to enhance penetration by 2% while maintaining polarizing capability at the same time.
- Enhance polarizer penetration by 2% through low-reflection surface treatment to reduce backlight LED consumption to reduce energy consumption at the same product brightness.

Optical Film:

- Changed material design in 2022 to reduce product reflection rate by 2% and enhance penetration rate by 2%.
- After enhancing penetration in 2023, the end-product electricity consumption can be reduced by 5%.
- Develop high-penetration materials for displays to reduce power consumption and carbon emissions at the same condition for customers.

Optical Adhesive:

- Enhance panel penetration to reduce light loss so as to reduce energy consumption by about 20%.

PDLC Smart Optical Film:

- High heat-shielding efficiency: When using on French windows and curtain walls, the UV shielding rate >99% and infrared shielding rate >87% can block UV from entering the interior to harm the human body and furniture and reduce heat. The laboratory of National Cheng Kung University (NCKU) proves that the product can effectively reduce aircon consumption by 13–18% to effectively reduce aircon power consumption, make it a great green building material. As there is no rivalry products in the Taiwan market so far, our PDLC smart optical film is the unique smart glass film that can block UV and infrared at the same time.
- Compared to other smart glass films, transparency after electrification: save electricity by 10–13%, power-off blocking state: save electricity by 13–18%.
- Compared to ordinary glass (NCKU container house under 20m²): Save electricity by 19%, equivalent to carbon emissions of 96.38kg CO₂e.
- Passed the self-verification 2500–3000h weather resistance (RA) reliability test and the QUV 1500 h validation by NCKU laboratory. Both have exceeded the industry requirements and standards.
- UV shielding and heat shielding are up to 99% and 87% respectively to effectively block heat from entering the interior to reduce the electricity consumption of home appliances, adding extra energy conservation and carbon reduction functions to the original privacy and transparency switch design to care for Earth.

High-
Performance
Products

Polarizer:

- Complete high weather resistance test (raise to 500–1000 h) in 2023 to reduce optical wavelength changes after weather resistance (RA) by adjusting chemicals and parameters of the manufacturing process.

Product Life

PDLC Smart Film:

- By passing the self-verification 2500–3000h weather resistance (RA) reliability test and the QUV 1500 h validation by NCKU laboratory, both exceeding the industry requirements and standards, we provide the industry-longest warranty period: 5 years (vs. one year in the industry). The estimated life is over 10 years.

Social Contribution

Polarizer:

- Eyecare products: Use low-reflection products to reduce ambient light from entering the human eyes to reduce the eye fatigue of users after long-time use.

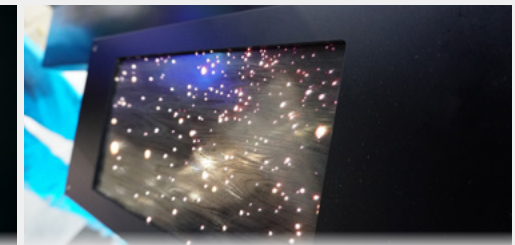
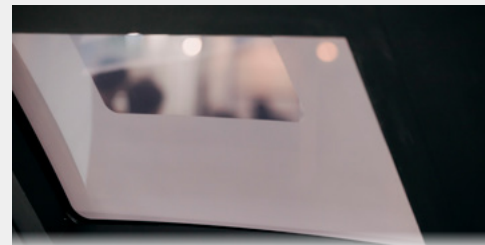
Optical Film:

Social

- High-penetration products can reduce the backlight quantity and brightness of displays to reduce the

Optical Adhesive:

- Enhance panel light-emitting efficiency and emit almost no hazardous substances in the manufacturing process to minimize the human hazards of displays.





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» **Advanced Battery Materials****Design**

Structure optimization	<p>Thinning key battery materials, the separator (isolation film) can also help enhance the energy intensity and power intensity of batteries. We will adjust the structure to develop thinner separators and develop new coating materials to reduce thickness while maintaining the same or improve the technical specifications.</p> <ul style="list-style-type: none"> Thin separators by 12-14μm. Thin coating by 4 \Rightarrow 1.5-2μm.
Better Materials	<ul style="list-style-type: none"> Use non-toxic water-based ceramic coatings.
Low-impact elements	<ul style="list-style-type: none"> Use polyolefin materials that are comparatively eco-friendly. Use organic-solvent-free process: Adopt the eco-friendly dry process for separator production.
Product safety	<ul style="list-style-type: none"> Independently verified QC mechanisms: Stringently meet the customer requirements and the ISO, IQC, IPQC, FQC, OQC, IATF 16949 standards to ensure the best quality of products for customers to use in battery and cell manufacturing processes without worries.

Manufacture

High-Performance Manufacture	<p>Enhance production efficiency and minimize energy consumption with smart manufacturing and powerful production experience.</p> <ul style="list-style-type: none"> Increase unit area output by 130% over last year and extend number of layers to 24. Support process extension for multiple layers to reduce electricity consumption by 9.2%.
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Logistics

Green Packaging	<p>Increase the length of each reel through reeling optimization and packaging design to enhance transportation efficiency and reduce packaging.</p> <ul style="list-style-type: none"> Increase the shipping length of products. Reduce packaging materials to enhance the container use rate and reduce transportation cost. In 2022 we reduced waste by 35.4MT through reel reuse. Recycled 45,198 reels for reuse by about 98%.
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Use Maintenance and Repair Scrap**Product Life**

The unique porous structure enables even pore diameter distribution on the battery separator for even distribution of charge and discharge currents. Low product curvature lowers the internal impedance of battery separators to enhance cell performance achieve quick charge and quick discharge and extend battery cycle life.

- The low internal impedance manufacturing process enhances battery cycle life.
- Special pore diameter control technology enhances batter cycle decline.

Social Contribution**Environmental**

- By enhancing process efficiency and yield rate, reducing waste, and making relevant improvements, the 2022 separator carbon emissions reduced by 50% over 2020, achieving the 45% target. In the future, we will continue to implement process improvement and thermal management to reduce carbon emissions.

Social

- Driven by the EV heat, lithium battery production is increasing exponentially, thus leading the production of the relevant waste. We will continuously extend material life to facilitate the raw material demand for lithium battery production and to reduce waste.





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» Healthcare and Nursing Products

Design

Structure optimization

Skin Care:

- Width optimization and alignment adjustment: Increase the unit mask and paper quantity of acne patches from 333 patches to 500 patches to enhance utilization rate by 6% and 20% respectively. Mass production is projected in 2024Q1.

Vision Care:

- Use low-PP caps to reduce PP consumption by 60%.

Medical sterilization packaging:

- Introduce the economy pack in 2023 to reduce the overall plastic consumption.

Better Materials

Medical sterilization packaging:

- Produce films with solvent-free bonding to reduce the human and environmental impacts of manufacturing process.

Skin Care:

- Skincare products using "alcohol-free," "perfume-free," and "pigment-free" formulas.
- The marine-friendly formulas containing no Palau-prohibited substances are used for all sunscreen products.

Recyclable Materials

Vision Care:

- Recycle PP molds and PP cases of disposable contact lens, such as replacing non-toxic plastics, to achieve the circular economy goal of waste reduction and reduce environmental pollution.

Low-impact elements

Skin Care:

- Use solvent-free ingredients and processes to effectively reduce the human and environmental hazards and impacts of organic solvents.

Vision Care:

- World-exclusive EautraSil@Plus technology. Resolve the incompatibility of silicone hydrogel without using solvents to avoid solvent residues and reduce the human hazards and risks of solvents to achieve no irritation and no allergy while enhancing oxygen transmissibility and comfort.

Product safety

Medical sterilization packaging:

- Passed the certification of the EU 2017/745 Medical Device Regulation (MDR) and completed US FDA certificate renewal.

Skin Care:

- To ensure use safety for consumers, all patch products pass the cytotoxicity test, allergy test, and aging safety test. All skincare products also pass high-standard stability test, skin friendliness test, and functional tests.

Manufacture

High-Performance Manufacture

Wound Care:

- In 2022 we introduced the automatic folding machine and gauze yield rate improvement to enhance capacity by 56%.
- In 2022 we improved the single-lot silicon preparation dose to increase capacity by 25%.
- In 2022 we enhanced the yield rate by 10% of the ChitoClot Pad manufacturing process to reduce carbon emissions by 6.3%.
- In 2023 we will introduce the gauze folding machine to reduce packaging time by about 40%.
- In 2023 we will maximize the single-lot silicon preparation to increase capacity.

Skin Care:

- Increasing machine speed: Apart from increasing yield rate increased by 11.1% from 73.2% to 84.3%, the output time was also reduced in 2022.
- Introducing the automatic feedback system: Through collaboration the automation team will develop image and program learning. After implementation in 2022, the projected acne patch deviation was 3,700 pieces while enhancing efficiency by nearly 2%.
- Implementing the automatic recognition system: In 2022 the visual inspection quantity accounted for 63.1%. In 2023 we will improve the middle-section AOI image recognition capability to replace human visual inspection with AOI recognition to reduce visual inspection from 63.1% to 35%.
- Reducing waste oil: Teaming up with the development for production collaboration, we analyze the composition of clean waste oil and optimize the cleaning process to effectively reduce waste oil production. In 2022 waste oil reduced by about 46% over 2021 to 9.1MT.

Vision Care:

- Implement surface automatic optical inspection to increase utilization by 27% and capacity to 100pcs/hour.

Medical sterilization packaging:

- Increase capacity by over 20% through machine speed optimization and automation.
- Enhance production efficiency and reduce process waste through process improvement and precision manufacturing.



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Logistics

Wound Care:

- Product packaging is 100% FSC-certified. Currently, we use a total of 55 types of paper containers in total. The switch to FSC-friendly packaging was completed by 43% in 2022, and 100% switch will be finished by the end of 2023.
- Apart from standardizing the specifications of exterior cartons in 2023, integration and consolidation of existing cartons will apply to new products, and revolving use and switch will be used based on sales need to reduce over 2,000 cartons in stock.

Skin Care:

- Product packaging is 100% FSC-compliant: Over 90% of products are packed with paper containers. Introduced the FSC-certified color boxes for the first time in 2022Q1. Over 50% were packed with such boxes in 2022. The 2023 target is 100%. The FSC certification for other packaging including display boxes and logistical containers will start in 2023 to progressively realize our forest sustainability commitment.
- Reduced consolidation from 2022Q3 to successfully reduce the 42% of cartons for consolidation and to reduce carton purchasing costs by NT\$83,000. Adopted integrated shipping in 2022Q4 to reduce transportation costs by NT\$50,000 with pallet shipping.
- Analyzed packaging materials consumption: Color boxes, cartons, and aluminum packs accounted for 86.5% of carbon emissions. Adjusted packaging portfolios to integrate multiple boxes into single box to reduce aluminum pack consumption and carton consumption at the same time. Used reusable containers when shipping to specific regions to reduce exterior carton use. The 2022 carbon emissions of packaging materials reduced by 18% over 2021.

Vision Care:

- Adjusting printing methods: Required information is printed in the interior of containers to reduce paper consumption.
- Reducing packaging materials: While online shopping is the most common in mainland China, after assessing the storage problems of old and new product packing formats, we started with reducing the container size of the monthly color disposable contact lenses. Apart from reducing the packaging materials for single packs, we also enhanced the transportation volume in each delivery.

Medical sterilization packaging:

- Reduced polyester strapping use to reduce over 400kg of waste each year to reduce the environmental burden.

Green
PackagingHigh-
Performance
Delivery

Wound Care:

- Plan centralization of third-party sterilization in 2023 to lower transportation frequency within the production-sales schedule and effectively capture the sterilization time and transportation frequency so as to reduce transportation length. It is estimated that over 2,000km of transportation, at least 800L of petroleum, and carbon emissions will be reduced in 2023.

Medical sterilization packaging:

- Plan smart logistics using the single-trip multi-destination model for domestic deliveries to reduce transportation of over 500km each year to reduce carbon emissions from vehicles. This will be implemented in 2023.

Use Maintenance and Repair Scrap

High-
Performance
Products

Wound Care:

- The average fluid absorption rate of ChitoClot Gauze is 14 times more than its weight, demonstrating excellent exudate absorbency. In bleeding management clinical trial, the bleeding management score of ChitoClot Gauze doubles than general gauze products.

Skin Care:

- The DermaAngel acne patch has excellent absorbency better than that of the market-leading brands by 3-5 times.
- Special matte surface finish.

Vision Care:

- The oxygen transmissibility is up to Dk/t193, which is 6 times that of traditional hydrogel. Oxygen reaches the cornea directly for the eyes to breathe smoothly.
- Unique color blocking technology keeps the pigmented layer in the middle layer and isolated from the eye for fade resistance.
- Solvent-free formula significantly enhances lens hydrophilicity and keeps eyeballs wet and smooth.
- Smart peripheral edge design effectively promote tears exchange and discharge metabolism to prevent helps improve surface wettability, reducing irritation and providing extra comfort lipid and protein from deposition.

Product
Life

Wound Care:

- Through special process technology, ChitoClot Gauze has a storage period of up to 5 years, higher than the 3-year life of ordinary gauze.



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Circular Economy (closed loop)

Vision Care:

- In response to the waste case problem of contact lens users, after assessment and collaboration with retailers, we will soon introduce the case reuse program. In addition to the waste cases of Miacare products, we can also recycle the waste contact lens cases of other brands from retailers at the same time. Apart from creating the secondary value of waste cases through recycling, we also encourage consumers to develop good recycling habits in addition to enjoying the convenience of disposal contact lenses.

Medical sterilization packaging:

- Currently, we are actively piloting reel use for self-produced films. Trials will start progressively in 2023.

Social Contribution

Environmental

Skin Care:

- Addition to the acne patch solvent-free process, we are also committed to reducing packaging materials, using materials with low environmental burden, and improving individual packaging without affecting the materials quality and warehouse operation to expand the scope of packaging materials reduction. In 2023 we will begin packaging "weight reduction" through material and specification assessment and packaging method optimization together with suppliers. Apart from reducing product weight and size, this can also reduce carbon emissions from transportation to contribute to environmental protection.

Social

Wound Care:

- Reduce health burden, contribute to home care and health nursing services, and help elderly people and persons with disabilities to improve daily life quality.

Vision Care:

- Protect and improve vision condition and provide the best eye care service.

Medical sterilization packaging:

- A sterile blocking system protects healthcare professionals and patients against hospital-acquired infections during related treatment behavior.





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» Waterproof and breathable textiles

Design

Structure optimization	<ul style="list-style-type: none"> Optimized application of thin film microstructure design and composite gel to enhance product performance and reliability.
Recyclable Materials	<ul style="list-style-type: none"> Utilization of recycled materials such as marine fishing nets and PET bottles for sustainable applications and optimal connectivity.
Low-impact elements	<ul style="list-style-type: none"> Solvent-free film production technology using low environmental impact, non-volatile organic compound (VOC)-free polymers.
Product safety	<ul style="list-style-type: none"> Intertex-certified materials free of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) to align with the trend of future sustainable applications. Micro-nano pore size design that meets the functional requirements of blocking bacteria in the post-pandemic era, tested through wet bacterial penetration testing (TTRI EN ISO 22610).

Manufacture

High-Performance Manufacture	<ul style="list-style-type: none"> Online fabric processing machine to increase fabric cutting efficiency by 50%. Introduction of automated packaging machine to enhance packaging capacity by 50%. Factory reassessment and addition of overhead cranes to reduce personnel and logistics movement, saving time wasted on station transfers. Addition of an automated adhesive dispensing machine to improve production efficiency. Optimized scheduling for concentrated production of products to avoid production capacity reduction due to changeovers.
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Logistics

Green Packaging	<ul style="list-style-type: none"> Reduction of core paper thickness from 3 inches to 2 inches for some shipped products, increasing fabric roll length and improving container space utilization, indirectly reducing transport trips and carbon emissions.
High-Performance Delivery	<ul style="list-style-type: none"> Consolidated shipments with customers, while meeting shipping deadlines, to maintain pallet recycling operations and further increase the overall recycling rate by 2% in 2022.

Use Maintenance and Repair Scrap

High-Performance Products	<ul style="list-style-type: none"> Establishment of a longer and more reliable product life cycle through BenQ Materials' core composite technology.
Product Life	<ul style="list-style-type: none"> Hydrophilic breathable materials with superior waterproof characteristics, ensuring resistance to hydrolysis and aging commonly found in polyurethane materials.

Social Contribution

Environmental	<ul style="list-style-type: none"> Resource waste reduction: Xpore minimizes power consumption while significantly increasing waste recycling rates. All Xpore processes strictly adhere to environmental regulations and do not generate any air or water pollution. Transforming the factory into a "green ecological park" to create a habitat for bees and tree frogs. Adoption of solar power generation to reduce carbon footprint.
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Green Logistics

» Green logistics policy

Net-zero emissions" is a global concern for businesses, and achieving net-zero is the ultimate goal. In addition to continuously improving the efficiency of electricity and water usage in our processes, BenQ Materials has implemented low-carbon circular management. This includes promoting low-carbon transportation to reduce carbon emissions caused by transportation, which is a primary focus of our green logistics policy.

Low-carbon Transportation

Planning for transportation optimization, implementation of combined type of transportation route, in order to reduce air freight weight, thereby achieving the goal of sustainable logistics and reduction of carbon emission.

Product packaging material reduction

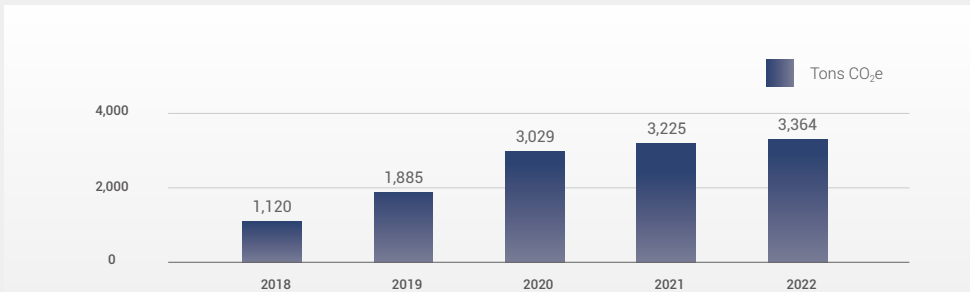
Change the disposable cartons to recyclable packaging boxes for the shipping method, and increase the times of use of use of packahing material, in order to reduce generation of waste.

Packaging Material/ Pallet Recycle

Use recyclable and reusable pallets for shipping, in order to prevent the use of disposable pallets, that may cause unnecessary wastes.

» Low-carbon Transportation

Since 2018, we have implemented a composite transportation system and adjusted our production plans specifically for display materials. Starting from 2023, we have gradually shifted back to regular sea freight and reduced air transportation. According to statistics from 2017 to 2022, we have achieved a cumulative reduction of 12,919 metric tons of CO₂e in carbon emissions. In the future, we will continue to implement low-carbon transportation policies and strive towards our net-zero emissions goal through low-carbon circular management.

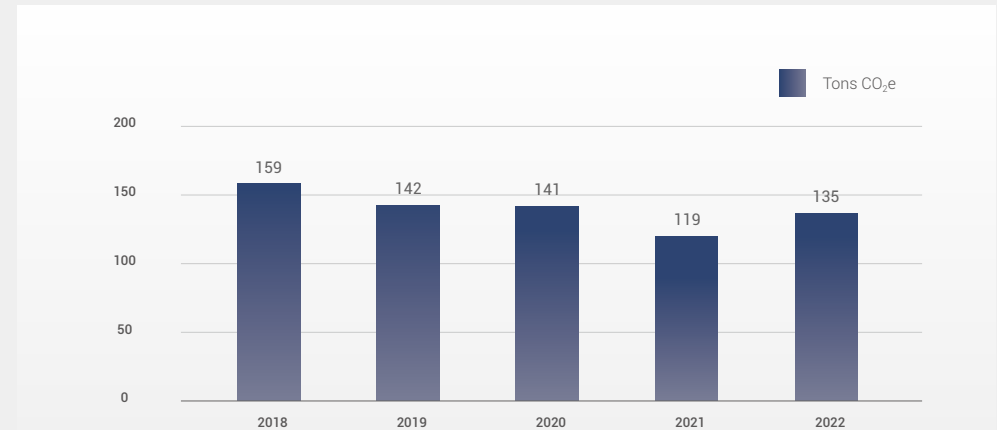


Note: Carbon emission reduction equation: Number of transportation trips × [Carbon emission of single trip of transportation before implementation - Carbon emission of single trip of transportation after implementation]

» Low-carbon packaging

In order to promote sustainable packaging practices, we have implemented several policies for display materials, including "Verified Packaging Box Recycling," "Reduced Number of Product Shipments and Air Transport Usage," and "Recyclable Packaging Boxes." The aim is to encourage and lead customers to adopt these practices.

For our polarizer film products, we have transitioned from single-use cardboard packaging to "low-carbon packaging" for shipping. By implementing reusable packaging, we are able to reduce the environmental impact of packaging materials. Based on the shipment data from our polarizer film factory in 2022, the use of recyclable packaging boxes has resulted in a reduction of approximately 135 metric tons of CO₂e in carbon emissions through the reduction of one-time use packaging materials.



Note : 1. Packaging material recycling rate: Calculation method refers to Each packaging material recycling volume per month of the polarizer plant site ÷ Each packaging material shipping volume per month.

2. The packaging box carbon reduction coefficient data source refers to the statistics of Longchen Paper & Packaging that for 1 kg of recycled carton during the recycled waste paper process, the carbon emission is approximately 0.8 kg-CO₂e



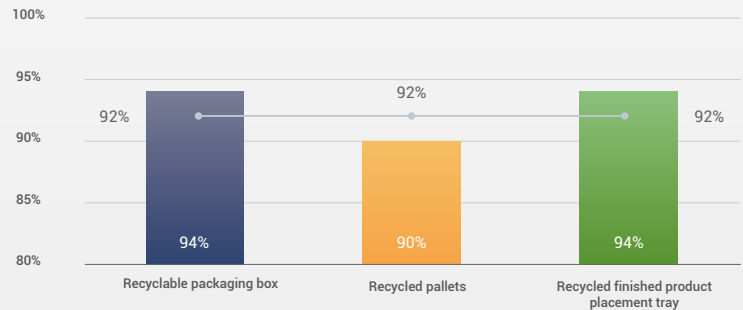
» **Low-carbon recycling and circularity**

BenQ Materials employs recyclable packaging materials and pallets for its polarizer business, accompanied by low-carbon recycling management to track the volume, recovery rate, and achievement rate of packaging materials. Through effective packaging recycling mechanisms, the company ensures the quality of recycled materials, extends the lifespan of packaging materials, reduces their usage and costs, and minimizes waste generation.

In 2022, the recycling rates for packaging boxes and pallets were 94% and 90% respectively. The recovery rate for finished product trays reached 94%. The overall recycling rate for packaging boxes and finished product trays in 2022 was 92%, showing an increase of approximately 0.67% compared to 2021 and meeting the 92% target. However, the target for pallet recovery rate was not achieved due to uncertainties related to transportation-related damages, which will be addressed as one of the improvement areas for BenQ Materials' recycling indicators.

The company continues to monitor the recycling status of customer returns and promptly arranges transportation for recycling, aiming for a recycling rate of 93% in 2023. Furthermore, in the advanced battery materials business, BenQ Materials utilizes recycled materials as substitutes to reduce the environmental impact of its products. In 2022, the utilization rate of core tubes reached 98%, resulting in a waste reduction of 35.4 metric tons. As the scale of other new business divisions, such as revenue and shipment volume, continues to expand, the company will also track recycling status and carbon emission data to further reduce carbon footprint and work towards the net-zero target.

Polarizer Packaging Recovery Rate %





Chemical Management

» Hazardous Substance Management

BenQ Materials has established the GP Core Team in 2010 and is committed to the promotion of Hazardous Substance Free (HSF) management. The company reviews the hazardous substance management current condition annually according to the international regulations, customer demands and environmental protection trend, in order to update the "Environmental Quality Assurance Management System Operation Standard" of BenQ Materials. All products are required to comply with the EU RoHS, EU REACH, including directives, international regulations of WEEE and customer demands. The company has established the material hazardous substance free management system, in order to ensure that all of the products of functional films and battery materials manufactured comply with the international regulations and relevant specifications of customers for hazardous substance management.

Raw material suppliers, process material suppliers, posterior cutting suppliers and shipping packaging material suppliers are linked in order to allow the upstream suppliers of the supply chain and BenQ Materials to form an effective green product industrial chain. Accordingly, effective control can be implemented at the source, thereby achieving products complying with the green product standard and reducing the impact of product manufacturing process on the environment. The number of non-use of hazardous substance applications in 2022 was 1,817 cases, and the compliance rate was 100%

Hazardous

Identify international regulations and customer demands

BenQ Materials hazardous substance management guidelines

Request suppliers to provide compliance documents

Respond to provide green supporting documents complying with customer's requirement

Number of HSF Product Applications

Product	Number of Applications	Compliance Rate
Functional Film	1,284	100%
Isolation Film	26	100%
Functional textiles	9	100%
Contact Lens	207	100%
aesthetic medicine products	190	100%
Biomedical products	101	100%
Total	1,817	100%

» Hazardous Substance Management Outcome

1

Products comply with EU RoHS completely. All products of BenQ Materials comply with the EU RoHS standard for the requirements on the concentrations of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers, etc. In 2016, to comply with the RoHS 2.0 regulatory requirements, BenQ Materials included phthalates (DEHP, BBP, DBP, DIBP) in the product test, and the test result was "Negative."

2

Electronic product Halogen Free (HF) requirement: General customers' demand for HF refers to that the individual content of bromine and chlorine in the product is <900ppm respectively, and total content <1500 ppm. According to the more rigorous requirement of BenQ Materials, the individual content of bromine and chlorine is <800 ppm respectively, and all products of BenQ Materials are able to satisfy the aforementioned requirement.

3

Product hazardous substance list disclosure: Regarding EU REACH, for the hazardous substances announced by EU REACH and the Substance of Very High Concern (SVHC) subsequently announced, BenQ Materials has conducted investigations on suppliers after the announcement of SVHC by EU REACH, and the investigation result is disclosed to customers in good faith.

In 2022, the EU REACH announced the 26th and 27th batches of Substances of Very High Concern (SVHC), consisting of a total of 5 substances. In the same year, we conducted 324 customer surveys for 21 customers in the polarizer industry, 9 customers in the optical materials industry, and 6 customers in the battery materials industry. We have faithfully disclosed the survey results.

» Supplier Chemical Management

By establishing a connection with raw material suppliers, process material suppliers, cutting facilities, and shipping packaging suppliers, we aim to form an effective green product industry chain with upstream suppliers of BenQ Materials. This allows us to effectively control and manage the environmental impact of the product manufacturing process from the source, ensuring compliance with green product standards and reducing environmental impact.

Supplier management process: BenQ Materials manages declaration information through the "Supplier Portal" and undergoes internal approval. The documents can be accessed and queried within the system, and supplier testing reports need to be uploaded and updated annually.



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foreword

1

BenQ
Materials

2

Sustainability
Governance

3

Responsible
Governance

4

Responsible
Product

Core Technology and Intellectual Property Management

Sustainable Design and Innovation of Products

5

Environmental
Sustainability

6

Partnership

7

Friendly
Workplace

8

Social
participation

9

Appendix

Green Logistics

Chemical Management

Product Safety and Marketing Labels

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Product Safety and Marketing Labels

» Medical Device Specifications and Certifications

Before the sale of any medical devices sold by BenQ Materials in various countries, it is necessary to obtain the required national regulations and certifications of the respective sales regions. Currently obtained certifications include Taiwan TFDA, EU CE, US FDA, China CFDA, and others. For detailed information on product certifications in different countries, please refer to [the BenQ Materials ESG official website](#).

During clinical trials, products must also comply with the EN ISO 14971:2012 Medical Device Risk Management Standard and ISO 14155:2011 Guidelines for Clinical Evaluation of Medical Devices. These standards ensure that risk management in product development and processes such as design, conduct, documentation, and reporting of clinical trials comply with the specified guidelines, ensuring that clinical trials are conducted scientifically and produce reliable results. Additionally, the sterilization packaging series of products must pass the ISO 10993:2018 Medical Device Biocompatibility Testing before shipment.

» Medical Device Manufacturing and Sales Licenses

BenQ Materials is a medical device manufacturer that has obtained the necessary licenses and registrations to engage in the manufacturing of medical devices. After being approved and registered, the company is authorized to manufacture medical devices in compliance with the safety regulations and requirements set by each country. The products are manufactured by licensed manufacturers who meet the specific criteria for producing such devices.

For the sale of medical devices, BenQ Materials must also obtain a pharmaceutical sales license as well as product registration to comply with the regulations in each market. Additionally, for the distribution of contact lenses, which are considered medical devices, they can only be sold to end consumers through channels authorized by holders of pharmaceutical sales licenses.

BenQ Materials is committed to complying with all necessary manufacturing and sales licenses and registrations to ensure the quality and safety of its medical device products, as well as to meet the regulatory requirements of each market.

» Medical Device Labeling and Marketing Regulations

• Medical Device Packaging Labeling Regulations

1.The transportation packaging should be clearly and permanently labeled with the product catalog number, quantity, manufacturer or supplier name/trademark, production date in accordance with ISO 8601 format, lot number, standard weight per square meter (expressed in grams), roll width (in centimeters) and length (in meters), recommended storage conditions, etc.

2.The labels on the inner packaging or roll should be clear, legible, and securely affixed with the quantity, manufacturer or supplier name/trademark, lot number, and standard weight per square meter (expressed in grams).

• Medical Device Labeling Regulations

The labeling of various medical devices must comply not only with the relevant regulations for medical devices in the country of sale but also with the standard EN 1041:2008 for information provided by medical device manufacturers, as well as the standard ISO 15223-1:2016 for symbols used in medical device labels and information. The disclosure information for each product should be prepared based on the label symbols specified in the standards.

For products falling under the regulation of the Medical Device Management Act, such as skincare products, necessary information must be included in the medical device labels, instructions for use, or packaging. This information includes the product name, license number or registration number, performance/intended use or indications, manufacturing date/expiration date or shelf life, model/specification or main ingredients, warnings/precautions/usage restrictions or foreseeable side effects, name and address of the license holder or registrant, name and address of the manufacturer, batch number or serial number, and other information that should be included as announced by the competent authority.

• Medical Device Marketing Regulations

Medical devices and related products must comply with the relevant laws and regulations regarding medical device advertising and marketing in each country. Taking Taiwan as an example, prior to conducting medical device advertising and marketing, all information, including text, images, or words, must be submitted to the competent authority for approval. There are also restrictions on the promotional methods, and advertising cannot be conducted through the use of another person's name, publications/documents, interviews, or other inappropriate means.

For example, in the case of contact lenses, which fall under the regulations of the Medical Device Management Act, whether it is print or media advertising, it must comply with the advertising review regulations for medical devices set by the Ministry of Health and Welfare. The Food and Drug Administration of the Ministry of Health and Welfare provides guidance on the advertising laws and review principles for medical devices, which are promptly disseminated to relevant departments for implementation. The content of trial articles for brand products published by brand-endorsed influencers is reviewed by regulatory authorities to ensure compliance with advertising laws and regulations.