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Science

Science is our competitive edge. Cutting-edge technologies to deliver creative solutions

Management of Technology (MOT) is the engine of sustainable growth at the Mitsubishi Chemical Group, driving innovation so we can deliver value to society. We will step up the pace of creating new solutions by using advanced technological capabilities spanning everything from basic research to manufacturing technology, extensive intellectual property, and an open innovation approach that allows us to incorporate new trends. We are also utilizing digital technologies to accelerate R&D, optimize and improve efficiency in the value chain, and achieve fundamental improvements in business efficiency.

Innovation Strategy ▶Page 45

New research facility established at the Science & Innovation Center ©GRAFILM

Digital Strategy ▶Page 49

Lithium-Ion Battery Electrolyte

Science. Value. Life.
Changing electrode surface properties to prolong battery service life and improve performance

In the 2000s, the MCG Group started working on the development of EV batteries with long service lives and high power output. Rather than taking the conventional approach of changing the composition of the electrolyte itself, we invented a method that significantly enhances output by adding minute quantities of an additive (lithium difluorophosphate) to the electrolyte to reduce electrical resistance on the electrode surface. With conventional technologies, there was a trade-off between long service life and performance, but our method has allowed us to develop batteries with both these characteristics.

This discovery has had a huge impact in scientific circles, stimulating debate on electrode surface modification technologies in both industry and academia.

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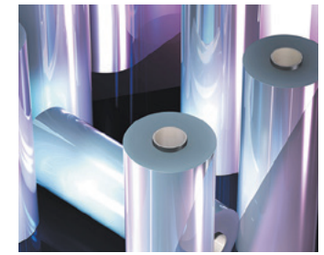
Science. Value. Life.

Leveraging our technological capabilities to develop a portfolio of display components

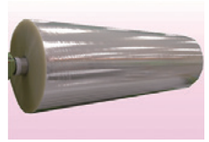
Across the MCG Group, we have developed proprietary and basic technologies in a wide range of business domains. Our optical polyester films have captured approximately 20% of the global market. We are now moving to rapidly secure supply capacity for growing global markets and deliver solutions for increasingly high-level needs in order to support the evolution of a wide range of industrial products.

We are also developing a range of functional components designed for displays, including base materials for polarizing plates, light guide plates, optical adhesive sheets, and reflector films.

Optical polyester films
Share of global market:
Approx.
20%

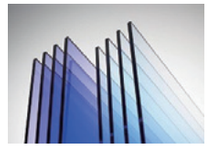


Main display components



OPL Film

This optical polyvinyl alcohol (PVOH) film is used as the base material for polarizing film. Images and characters can be displayed vividly when this film is used.



SHINKOLITE

This acrylic resin sheet is used in a wide range of fields, including signage, displays, large water tanks, and light guide plates. The *SHINKOLITE* grade for light guide plates features superior surface properties and produces bright, uniform illumination under varied light sources.

CLEARFIT

This clear, adhesive sheet can be used as a filler between layers of panels used for touch and other types of displays. Use of this sheet to fill voids in the display prevents mirroring and improves contrast.

Future products under development

Light guide plate materials for AR glasses (xR-related optical materials)

Augmented reality (AR) glasses have the potential to be the next major innovation after smartphones, and the market is expected to grow rapidly in the future. At the MCG Group, we are focusing on the development of resin sheets used in light guide plates. Leveraging our capabilities in optical control technology, we aim to expand our business in the growth market for AR glasses.

Image projection principle of AR glasses