Expand Carbon Handprint Technology and Energy-efficient Materials to Help Clients Reduce Carbon Footprint

CHIMEI
a step up

KEY CLIENT / INDUSTRY / APPLICATION INFO

The world's leading panel manufacturers

OPPORTUNITY

In response to Net-Zero Carbon Emissions by 2050 Scenario, the world's leading manufacturers are actively collaborating with their suppliers to reduce carbon emissions

CHALLENGES

- Increasing demands for carbon reduction from international brand clients
- Adoption of more rigorous energy efficiency index plans by the European Commission

SOLUTION

Develop new types of energy-saving photoresists that reduce carbon emissions and conserve energy in manufacturing processes or end products

RESULTS

- Help customers to effectively reduce energy consumption in production
- Enable customers to adapt to global carbon reduction trend on end products
- Proactively promote and construct a green supply chain

CHIMEI's energy-efficient photoresists help clients successfully fulfill their green commitment goals

With carbon reduction imperative due to the acceleration of global warming, CHIMEI has focused on energy conservation and further minimizing carbon footprints by supporting upstream and downstream partners to achieve net-zero objectives. We have always prioritized environmental protection in striving for improvements through long-term developments in sustainable technologies. With EU enacting stricter TV energy efficiency regulations in March 2023, numerous internationally renowned panel manufacturers have been proactively exploring opportunities to partner with CHIMEI to fulfill their green commitment goals.

Acquire key material technologies to effectively minimize manufacturing energy consumption

In 2016, CHIMEI's Specialty Chemicals Business Unit started planning and developing energy-saving photoresists as highly customized innovations that must inevitably depart from existing concepts with solutions identified and developed according to the unique processes, equipment, and requirements of each client.

Reduction of baking temperature is one method for increasing manufacturing energy-efficiency, but its effectiveness was hindered as chemical resistance of low-temperature photoresists could not be resolved with common auxiliary raw materials, the replacement of which we had to develop to meet client demands. To this end, we have continuously strengthened our supply chain over the past several years. Suppliers were requested to deliver auxiliary raw materials with different structures to be assessed and recorded in a substantial and comprehensive database, based on the physical and chemical properties from which we then select suitable candidates after internal discussions and communicating with suppliers. We implemented sample tests for subsequent modifications in due time to successfully create our own key auxiliary raw materials to meet client's needs.

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Reduce carbon emissions in end products and create green value for color photoresists

As television energy efficiency regulations become stringent, the adoption of low-power-consumption panels is inevitable, of which dye photoresists that improve backlight efficiency are among the most common energy-saving products. However, enhancement of their heat resistance and transmittance has proven to be a challenge in reaching desired standards despite progress with primary structure selection as well as modification of functional groups. To resolve this issue, we diverged from the initial design "due to the high difficulty for a dye to accommodate both transmittance and heat resistance, let us leave the latter feature to the binder instead!" We then constructed a binder to enhance heat resistance followed with modifications and tests, which achieving outstanding results that had dye-based photoresists entered mass production for clients to enhance the energy efficiency of their panel products.

CHIMEI's Carbon handprint technology is indispensable for customers on the path to sustainability

CHIMEI's energy-efficient photoresists have resulted in 10 to 100 % energy savings for various manufacturing processes with up to 10 % in end products of clients. As part of our efforts to reduce carbon emissions and increase technical fingerprint, we will continue to strengthen our new photoresist technologies, promote them to global clients, collaborate with suppliers on developing raw materials with biomass and energy-saving processes, and co-create a positive cycle to infinitely magnified the impact of carbon reduction to accomplish our net-zero objectives.

> ***"The path toward carbon reduction in color photoresists has just begun. We are determined to be the pioneer of carbon handprints."***
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> **Jung-Pin Hsu**
> Manager, Research and Development Division III,
> Specialty Chemicals Business Unit, CHIMEI Corporation

COLOR PHOTORESISTS

High contrast, transmittance and color saturation. Excellent heat and chemical resistance, as well as good process characteristics for achieving high coating uniformity

To reduce carbon footprints, it is necessary to expand the carbon handprint

While footprints refer to past climate impacts, *handprints* are actions to create positive effects in the future. In other words , *do less* footprint by reaching out to help others with handprint. The core concept of handprints is to convert *reducing corporate carbon emissions into reaching out to help clients/up- and downstream suppliers to actively reduce footprints* to expand our influence.

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