

Development of New SUMILITERESIN™ ECP Epoxy Coating Powders for Coil-End Insulation

Reducing Environmental Impact Across the Entire Supply Chain
with Two New Products: a Room-Temperature Storage Grade and a Low-Temperature Curing Grade

Sumitomo Bakelite Co., Ltd. (Headquarters: Shinagawa-ku, Tokyo; President and Representative Director: Shinichi Kajiya) has developed a room-temperature storage grade and a low-temperature curing grade as new additions to its SUMILITERESIN™ ECP epoxy coating powder lineup for coil-end insulation in automotive motors. Designed to reduce energy consumption in logistics, customer storage, and coating processes, these new products maintain durability and coating performance comparable to conventional grades while helping reduce environmental impact across the supply chain and support carbon neutrality initiatives.

Background

In recent years, drive motors for xEVs (electric vehicles) have been operating at increasingly higher voltages in response to demands for greater power output and efficiency. As a result, insulation materials used in coil ends are required to provide a high level of reliability. At the same time, efforts toward carbon neutrality are accelerating across the automotive industry, making it increasingly important to reduce energy consumption not only in customers' coating processes but throughout the entire supply chain, including transportation and storage.

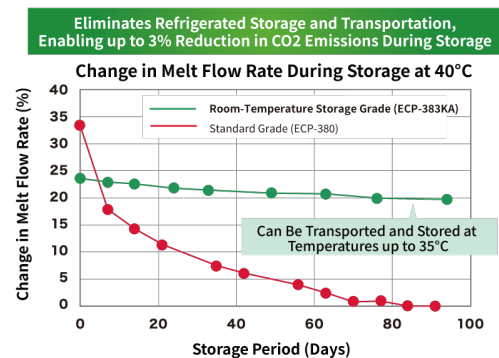
Sumitomo Bakelite Co., Ltd. has long supplied epoxy coating powders for coil-end insulation with excellent durability. To address challenges at different stages of the supply chain, we have now developed a room-temperature storage grade that helps reduce environmental burdens associated with logistics and storage, as well as a low-temperature curing grade that helps reduce energy consumption in customers' coating processes.

Key Features of Newly Developed SUMILITERESIN™ ECP Epoxy Coating Powders for Coil-End Insulation

1. Room-Temperature Storage Grade (ECP-383KA)

Contributing to Reduced Environmental Burdens in Logistics and Storage

Conventional products for this application require refrigerated transportation and storage at temperatures below 10 °C. By improving storage stability, the newly developed grade enables transportation and storage at room temperature (10-35°C). This helps reduce energy consumption associated with refrigerated storage facilities and low-temperature transportation.

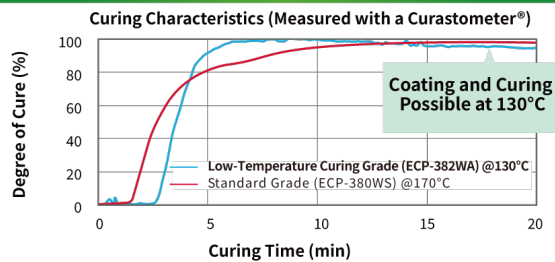


2. Low-Temperature Curing Grade (ECP-382WA)

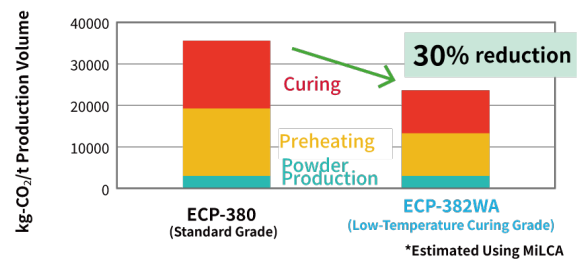
Contributing to Energy Savings in Coating Processes

While our conventional products for this application require curing temperatures of 160-200°C, the newly developed grade can be cured at 130°C. By optimizing the formulation of curing agents and resins, this product maintains curing performance and insulation properties comparable to conventional products while helping reduce energy consumption in coating and curing processes.

Coating and Curing Possible at 130°C



Up to Approximately 30% Reduction in CO₂ Emissions During Coating



3. Contributing to Reduced Environmental Impact by Addressing Challenges at Each Stage, from Manufacturing to Logistics

The automotive industry is seeking to reduce environmental impact not only through product performance improvements but also across the entire supply chain, including manufacturing and logistics, in support of carbon neutrality.

The newly developed room-temperature storage grade and low-temperature curing grade were designed to address energy consumption challenges at different stages of the supply chain.

- **Room-Temperature Storage Grade (Logistics and Storage)**

Enables transportation and storage at room temperature (10°C to 35°C), helping reduce energy consumption and operational burdens associated with refrigerated transportation and storage.

- **Low-Temperature Curing Grade (Coating Process)**

Reduces curing temperature, helping decrease energy consumption during post-coating heating and curing processes.



Left: Room-Temperature Storage Grade (ECP-383KA)
Right: Low-Temperature Curing Grade (ECP-382WA)

In addition to reducing CO₂ emissions, these products are expected to deliver cost-saving benefits.

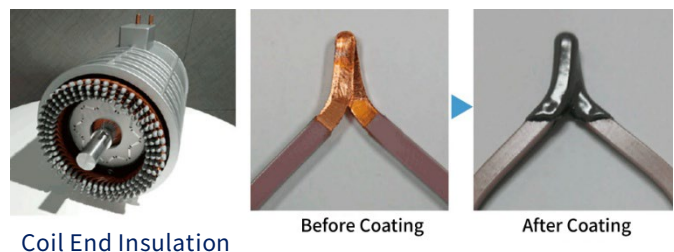
For example, the room-temperature storage grade reduces transportation and storage costs by lowering temperature control requirements during those phases, while the low-temperature curing grade reduces electricity consumption and electricity costs by lowering the curing temperature.

Please note that these benefits vary depending on usage conditions and the application environment, so we recommend evaluating and verifying them under specific conditions.

4. Environmental Performance and High Reliability Unique to Powder Coatings

Both newly developed products are solvent-free powder coatings and contain no VOCs.

They also offer excellent adhesion, electrical insulation properties, and mechanical strength. In addition, they enable uniform coating and precise film thickness control on complex shapes, delivering the high level of reliability required for automotive motor applications.



Coil End Insulation

Before Coating

After Coating

Future Outlook

The room-temperature storage grade and low-temperature curing grade are already being evaluated by multiple customers and have received favorable feedback. The room-temperature storage grade is expected to be launched in 2030. We will continue to strengthen promotion and proposal activities focused on the xEV and eVTOL markets and support the wider adoption of materials that contribute to reducing environmental impact.

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