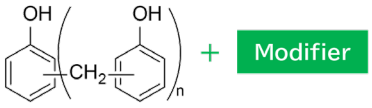
Sumitomo Bakelite Co., Ltd.
March 18, 2026

Launch of a New Series of High-Adhesion Phenolic Resins for Various Materials

Sumitomo Bakelite Co., Ltd. (Headquarters: Shinagawa-ku, Tokyo; President and Representative Director: Shinichi Kajiya) has introduced a new series of specialty modified phenolic resin products designed to meet the diversified needs for composite material development. This series features not only the excellent heat resistance and durability characteristics of phenolic resins but also superior adhesion to a wide variety of materials, including metals, organic substances, and inorganic substances, achieved through our proprietary technology. These products are designed to deliver exceptional performance and reliability across multiple industries and applications.

Background of Development

In recent years, the demand for lightweight, high-strength, and heat-resistant materials has significantly increased across various fields, including electronic materials, automotive components, and the aerospace sector. These performance requirements have become so high-level that they are often challenging to achieve with single materials alone, leading a rapid rise in the need for composite materials.



Under these circumstances, phenolic resins, known for their exceptional durability and heat resistance, have been widely adopted as binders for composite materials. Leveraging our proprietary synthesis technologies, we have developed phenolic resin products specifically designed to achieve high adhesion to various materials, and these products have been successfully utilized across multiple industries.
To better meet the diverse needs of our customers, we have now consolidated these high-adhesion phenolic resin products into a new series and expanded the product lineup. Below, we introduce some representative products from this series.

Metal High-Adhesion Phenolic Resin: SUMILITERESIN™ PR-56464

SUMILITERESIN™ PR-56464, which is specifically designed for metal adhesion, is a solid novolak-type phenolic resin. When used as a binder, its triazine structure forms coordination bonds with metal surfaces, providing excellent adhesion strength to metal substrates. When incorporated into thermosetting materials used in electronic components, this product contributes to the enhancement of reliability.

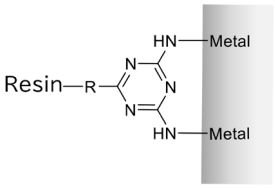
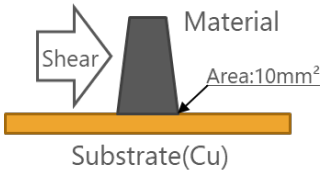


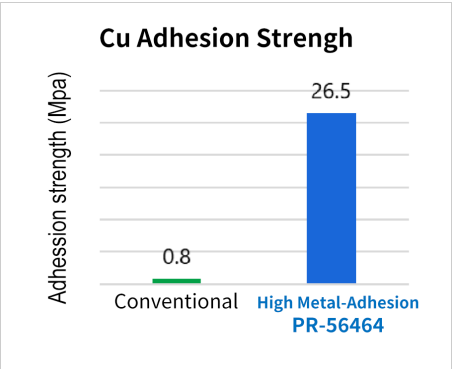
Figure 1: Die Shear Test Schematic

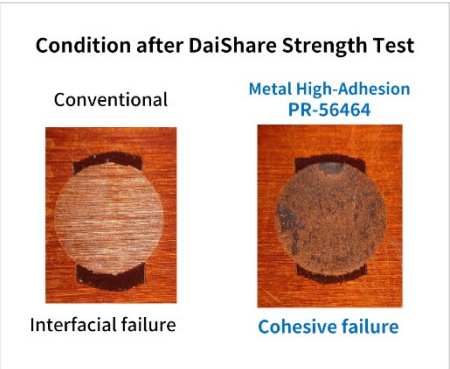
In an evaluation of adhesion to copper substrates using a die shear strength test with phenolic resin molding compounds, replacing general phenolic resin with metal high-adhesion PR-56464 resulted in a significant improvement in adhesion strength.
Furthermore, a comparison of fracture modes after testing revealed cohesive failure in materials containing PR-56464, further confirming the enhancement of adhesive strength.



Curing Conditions: Transfer molding
Mold temp 175°C / Injection pressure 10 MPa / Curing time 120 s

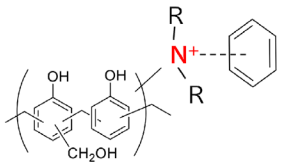
Figure 2: Test Results of Copper Adhesion Strength Using Phenolic Resin Molding Compounds





Carbon High-Adhesion Phenolic Resin:
SUMILITERESIN™ PR-56091 (Solvent-Based) / AQNOA™ PR-56542 (Water-Based)

Carbon materials are widely used in various advanced fields due to their exceptional properties such as lightweight, high strength, and excellent thermal conductivity. However, their chemically stable structure and the absence of functional groups on the surface present challenges in achieving adhesion with other materials.



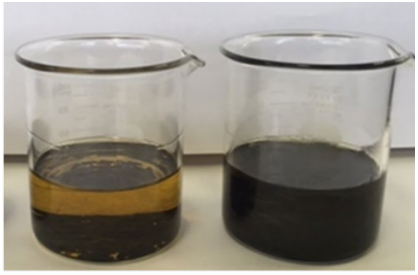
Our carbon high-adhesion phenolic resins, SUMILITERESIN™ PR-56091 and AQNOA™ PR-56542, are specifically designed to enhance miscibility with carbon materials through cation-π interactions.
When used as binders for carbon-based composite materials, these resins enhance affinity with carbon, thereby improving adhesion and durability. Additionally, phenolic resins exhibit exceptionally high carbon yield among synthetic resins, enabling them to function effectively as carbon binders when subjected to carbonization.

Among these products, AQNOA™ PR-56542 is a water-soluble phenolic resin with exceptional environmental performance. This proprietary product reduces environmentally harmful substances, such as phenol and formaldehyde, to less than 0.1%."

*For more information, please visit our website.

Ultra Low Monomer Water-Soluble Phenolic Resin AQNOA™ | Sumitomo Bakelite Co., Ltd.

Figure 3: Evaluation of Miscibility with Carbon



Evaluation Conditions:
Stir 50 g of liquid phenolic resin with 1 g of chopped carbon fiber in a 100-cc beaker. Observe dispersion visually after 1 day.

Other Lineup

In addition, we offer a wide range of highly adhesive phenolic resins tailored to various materials, including inorganic fillers, aramid fibers, steel plates, and water-based paints. Detailed data for each product number is available on our website.

High-Adhesion Modified Phenolic Resin | Sumitomo Bakelite Co., Ltd.

Environmental Impact Reduction and Sustainability

The High-Adhesion Modified Phenolic Resin Series contributes to sustainability by improving adhesion, reducing the required amount of adhesives and pre-treatment processes, and enhancing the durability of composite material products. These advancements extend product lifespan, thereby reducing waste and supporting the realization of a sustainable society.

Future Plans

Through the sales of high-adhesion modified phenolic resins, we aim to accurately address the diverse material design needs of our customers. By releasing our core strength in resin development, we will actively pursue the development of high-performance polymer products. Our focus is on key industries such as semiconductors, mobility, and energy, with the goal of achieving annual global sales revenue of 2 billion yen by fiscal year 2030.

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