

PRESS RELEASE

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Dry coating: one technology, many parameters, and one need for tailored current collectors

As dry electrode manufacturing gains momentum across the battery industry, ARMOR BATTERY FILMS highlights a key challenge often overlooked: each dry coating process has distinct requirements, making tailored carbon coated current collectors a critical enabler of industrialization.

Dry electrode coating is one of the most promising innovations in lithium-ion battery manufacturing. By eliminating solvents from electrode production, it offers major economic and environmental benefits, including lower energy consumption, reduced CO₂ emissions, a smaller equipment footprint, and lower operating costs. Despite its potential, dry electrode coating still presents significant technical challenges. Among them, achieving strong and durable adhesion between the electrode and the current collector under competitive conditions, such as process speed and scrap rate, remains critical without the liquid phase used in conventional wet processes.

At ARMOR BATTERY FILMS, our more than 20 years of expertise in the carbon-coated current collector/electrode interface enables us to understand the key parameters that influence dry process performance.

One important lesson stands out: there is no single dry process.

THERE IS NO SINGLE DRY PROCESS

The term dry coating is often used, in contrast to wet coating, as if it referred to a single manufacturing method. In reality, the market is developing a variety of techniques, each with its own parameters and requirements.

Some processes rely on fibrillating binders, while others use spray deposition, powder-based coating, lamination, extrusion, electrostatic deposition, or other innovative approaches. Each technology introduces different constraints in terms of pressure, temperature, electrode composition, physicochemistry, surface energy, and mechanical stress.

As a result, no single carbon-coated current collector can meet all process conditions.

CUSTOM COATINGS TURN CHALLENGES INTO SOLUTIONS

To address this challenge, ARMOR BATTERY FILMS has developed a portfolio of primer technologies that can be adapted to the specific needs of each manufacturing route. Working closely with battery manufacturers, material suppliers, and equipment developers, we have gained direct knowledge of the diversity of dry coating technologies and their specific constraints. This understanding enables us to design tailored solutions that optimize adhesion, improve process robustness, and help unlock the full potential of dry electrode production.



“ARMOR BATTERY FILMS' coated current collectors have demonstrated strong compatibility with our Kynar® PVDF binders, both in calendaring-based and spray deposition processes.”
Clément Paul – ARKEMA dry process expert

Today, ARMOR BATTERY FILMS collaborates with leading innovators in the dry process ecosystem, including Arkema, Blue Solutions, Anaphite, InteCell, Fraunhofer IWS, and SFA Nexel, helping accelerate the industrialization of next-generation battery manufacturing.

The future of dry coating will not rely on a single solution. It will rely on dedicated, adaptable solutions. And that is precisely where ARMOR BATTERY FILMS brings value.

DRY COATING FORUM

As part of its commitment to supporting the dry coating ecosystem, ARMOR BATTERY FILMS will also sponsor and attend the Dry Coating Forum, organized by Fraunhofer IWS on September 29–30. This event will provide a valuable opportunity to exchange with key players in dry electrode processing and discuss how tailored carbon-coated current collectors can contribute to the industrialization of next-generation battery manufacturing.

ABOUT US

ARMOR BATTERY FILMS develops advanced current collector technologies for lithium-ion batteries. Leveraging ARMOR GROUP's expertise in precision coating and materials science, the company supports battery manufacturers in improving performance, sustainability, and industrial scalability.

ARMOR BATTERY FILMS

HQ: 20 rue Chevreul, 44100 Nantes – FRANCE
www.armorbatteryfilms.com – contact@armorbatteryfilms.com