



Using innovative approaches, Arcadium Lithium seeks to build on our partnerships with industry to deliver on the promise of **pioneering technologies which can improve battery safety, performance, manufacturing efficiency and sustainability.**

← LIOVIX® Lithium Anode Roll-to-Roll Double-Sided Production.

LIOVIX® is a unique printable lithium formulation that can improve the performance of lithium-ion batteries, reduce manufacturing costs and enable the next generation of battery technology, all while enhancing safety and sustainability.



> **Higher Capacity, Longer Life Batteries**

LIOVIX® can boost a battery's output and extend its useful life with more recharge cycles. Performance improvements have been validated by several leading OEMs and battery manufacturing customers around the world.

> **Enhanced Safety and Sustainability**

Since LIOVIX® delivers lithium in a stable, protected form, it reduces the need for very stringent environmental conditions. LIOVIX® also gives battery manufacturers greater control and precision in how much lithium they use (reducing waste), allows for higher process efficiency (i.e., throughput) and opens pathways to shift away from conflict minerals and use more accessible battery materials.

> **Commercially Scalable**

LIOVIX® can be incorporated into existing battery manufacturing processes using standard equipment and common industry methods for scaling operations.

> **Lower Manufacturing Costs**

LIOVIX® significantly reduces the need for a battery cell manufacturing process called "formation" and provides other cost savings and efficiencies resulting from improvements in battery capacity and cyclability.

> **Pathway to Next Generation Batteries**

LIOVIX® is an important technology for the development and commercialization of batteries using lithium metal anodes. These next generation batteries will address many of the challenges and limitations of the incumbent technology.



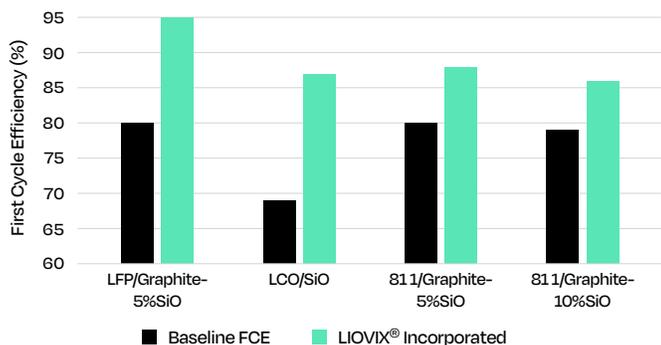
LIOVIX® Printable Lithium Technology describes the collective set of Arcadium Lithium intellectual property that allows Lithium to be deposited onto a substrate in a safe, controlled, scalable manner.



LIOVIX® technology can be applied across two broad areas: (1) electrode pre-lithiation in Li-ion Batteries and (2) lithium anode production.

	Where is the Printable Lithium Technology Used?	Key Benefits
Pre-Lithiation	<p>Sacrificial lithium is deposited on the anode to reduce / eliminate irreversible capacity loss during first charge</p> <p>SEI formation during rest!</p> <ul style="list-style-type: none"> ● Active anode material ● Carbon fiber ● Binder ● Anode with SEI layer 	<ul style="list-style-type: none"> • First cycle capacity improved by 10% – 30% • Improves capacity retention over life of battery by 20% – 50%; cells last longer resulting in lower cost of ownership • Pre-lithiation step simplifies cell manufacturing process and reduces capital required
Lithium Metal Anode	<p>Anodes, which are currently made out of graphite (carbon) in conventional Li-ion batteries, will be made out of a thin (<=20 micron) layer of Lithium Metal</p> <ul style="list-style-type: none"> ● LIOVIX® based lithium anode ● Solid electrolyte layer ● Cathode composite ● Current collector 	<ul style="list-style-type: none"> • LIOVIX® provides affordable, high-quality pathway for manufacturing Lithium metal anodes with desired width and thickness • Solid state batteries have potential to store more energy relative to conventional Li-ion batteries per unit mass and volume • Safer to operate (e.g., no flammable electrolyte)

LIOVIX® Technology is Cathode Agnostic and is Effective for a Wide Range of Silicon Containing Anodes.

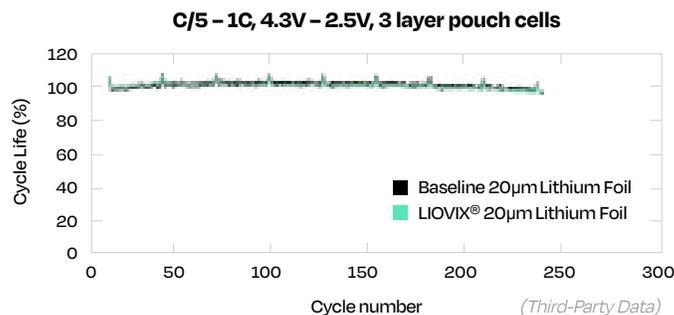
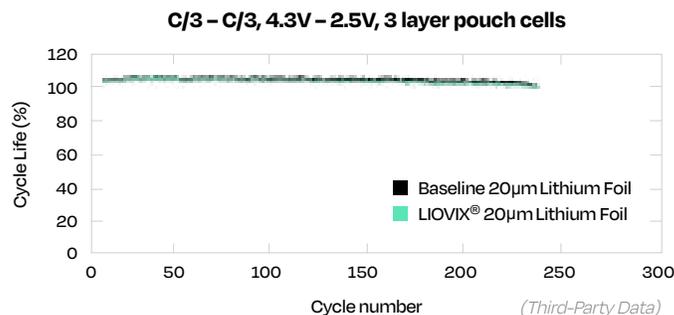


Lithium foil roll before calendaring.



Calendared lithium metal foil sheet.

LIOVIX® Lithium foil has similar performance compared to baseline foil.



North America

• Philadelphia, PA USA
P:+1.215.299.5900
• Charlotte, NC USA
P:+1.704.426.5300

Europe

Bromborough
Merseyside, England
P:+44.151.334.8085

Japan

Tokyo, Japan
P:+81.03.6268.0246

China

Shanghai, China
P:+86.21.6214.7578

Singapore

P: +65.3165.2600
F: +65.3165.2694

Korea

Seoul, South Korea
P: +82.10.5892.2300