BASF Battery Materials
Creating a sustainable battery materials value chain

Electromobility is one of the key solutions to merge the global desire for individual mobility and the need to significantly reduce local emissions, especially in combination with renewable energy. As a global leading supplier of battery materials for lithium-ion batteries, BASF aims to contribute to sustainable battery materials value chain and make electromobility a practical reality for everyone.

Our battery materials complement BASF's overall product portfolio delivering solutions to our customers from the automotive industry. While battery electric vehicles have the benefit of zero emission mobility, the battery itself and its raw material value chain require an energy intensive production process. BASF can help keep the carbon footprint of the value chain for electromobility as low as possible.

Reduced CO_2 footprint of our European value chain

As a leading chemical company, we want to achieve CO_2-neutral growth from 2019 to 2030. Our cathode active materials will have an industry leading low CO_2 impact thanks to our efficient manufacturing process, the high share of renewable energy, the upstream integration into the key raw materials like Cobalt and Nickel, as well as the short transportation route along the value chain.

- **Effectively research and develop** cathode active materials with a higher energy density leading to less materials consumption for batteries and enabling a longer driving range of cars
- Implement **innovative calcination technologies**
- **Leading production technologies** for reaction steps

In Europe, our recent investments will enable us with:

- **Efficiency gains through a concentrated value chain** combining base metal supply, particularly nickel and cobalt, precursor production, and cathode material production within one region.
- **An industry leading energy mix and closed-loop recycling** will allow for lower CO2 footprint compared to the average industry standard.
- **Short and reliable access** to products in proximity to customers' European manufacturing facilities will reduce the energy consumption during transportation.

Responsible Sourcing of Minerals for battery materials

The production of precursor cathode active materials (PCAM) and cathode active materials (CAM) involves various mineral raw materials such as cobalt, lithium, nickel, aluminum, and manganese. BASF is committed to foster a

responsible and sustainable global supply chain of raw materials, including cobalt.

- BASF aims to achieve more meaningful impacts in terms of the UN Sustainable Development Goals. BASF participates in multi-stakeholder and industry initiatives to reinforce our own efforts through collaborative approaches such as active involvement in Global Battery Alliance and a joint Artisanal and Small-scale Mining (ASM) Pilot Mine Project "Cobalt for Development" with BMW, Samsung SDI and Samsung Electronics, etc.

- BASF operates a globally applied corporate due diligence management process to identify and manage sustainability risks in its supply chains.
- In addition to our corporate commitment and due diligence management approach, specific guardrails apply when it comes to critical mineral sourcing for our PCAM and CAM businesses.

Recycling and circular economy

For BASF, circular economy is much more than waste management. A smart circular economy concept should integrate product design, development, production processes, use and re-use systems and materials right from the beginning. Our aim is to close loops and use products and resources in the best way possible across the entire value chain.

The combination of battery materials production and recycling closes the production loop and therefore enables a circular economy. To drive electrification, BASF provides solutions for high energy density cathode active materials and high efficiency metal extraction for battery recycling. Together with its partners along the battery value chain, BASF fosters the production and use of responsibly produced recycled raw materials in the battery market.

- Project "Recycling Li-ion batteries for electric Vehicle" (ReLieVe) for the development of innovative closed-loop process for the recycling of lithium-ion batteries.

About Us

BASF's Catalysts division is the world's leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success.

BASF - We create chemistry

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http://catalysts.basf.com/batterymaterials

Or contact us by:
BatteryMaterialsCommunications@basf.com

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