

METAL OXIDES FROM EVONIK ENHANCE THE PERFORMANCE OF LI-ION BATTERIES AND SAVE CO₂

AEROXIDE® 



AEROXIDE® fumed metal oxides increase the performance, service life and safety of batteries for electric vehicles.

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High-performance batteries boost electric mobility

The global shift to electric mobility is key to reducing CO₂ emissions and air pollution from road traffic. Batteries that are powerful yet safe, with quicker charging times and extended driving ranges, are essential for the acceptance of electric vehicles. Yet their high energy density puts increased strain on the battery materials and demands better technology development.

AEROXIDE® makes Li-ion batteries last longer

High-quality metal oxides from Evonik are used as additives in Li-ion batteries (LIB) to increase their performance, service life and safety. AEROXIDE® fumed alumina and fumed titania are produced by flame hydrolysis and consist of nanostructured aggregates with mean aggregate sizes of approx. 100 nm. The white powder provides a very narrow particle size distribution and exhibits high chemical purity.

As dry coating on the surface of cathode materials AEROXIDE® acts as a defined cathode electrolyte interface (CEI). It prevents undesired reactions and makes batteries last longer.

This increases the service life of a Li-ion battery by around 50%, resulting in carbon dioxide savings of ~10 tons CO₂ per kg AEROXIDE®. If all EV cars used batteries with AEROXIDE® by 2025, around 90,000 kt of CO₂ could be saved.*

Applications of AEROXIDE® in Li-ion batteries:

- Protective dry coating for cathode materials
- High performance LIB separator coating
- Nanostructured ceramic fillers inside separators
- Additive for electrolyte immobilization (gel polymer type)

*Based on global EV car market in 2025, assuming 1,200 GWh and CO₂ emissions of 15t for production of a 100 kWh EV car battery. Sources: SNE Research, 2022 and Forschungsstelle für Energiewirtschaft e.V. (Research Center for Energy Economics), 2020

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Leading Beyond Chemistry

OP-06-EN-01-2022/6-PW