

AERODISP® High-quality fumed alumina dispersions for Li-ion battery separator coatings

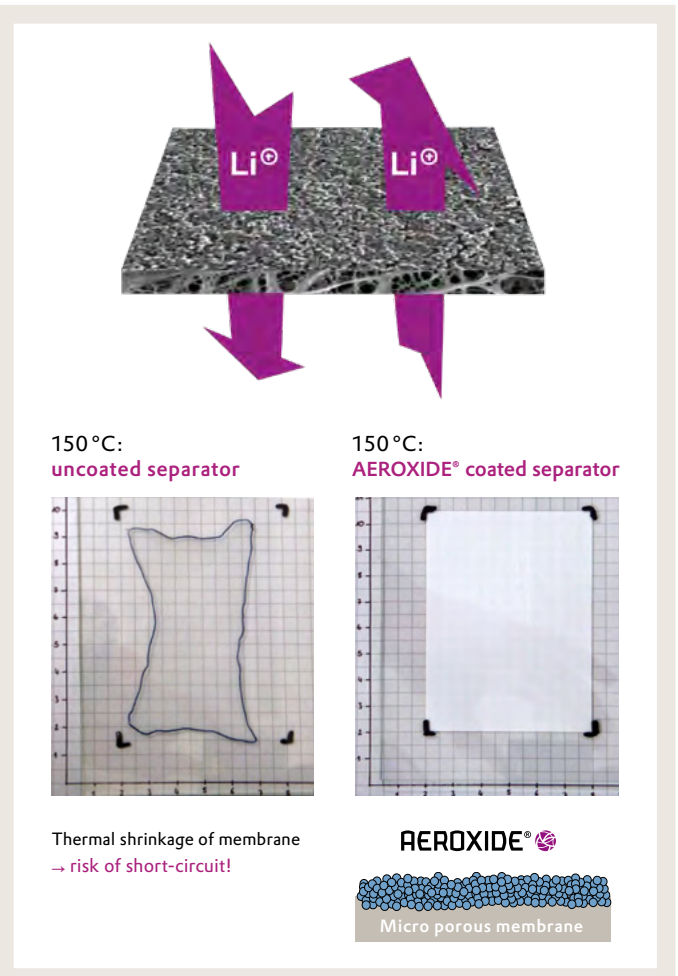


State-of-the-art lithium-ion batteries require a separator between the anode and cathode that not only prevents a short circuit but also allows Li-ions to flow through.

Shifts in temperature can reduce the safety performance of the microporous, polymer-based separator, which could cause a short circuit and risk electrolyte inflammation.

A thin ceramic separator coating made of AEROXIDE® fumed alumina reduces the thermal shrinkage and increases cell safety.

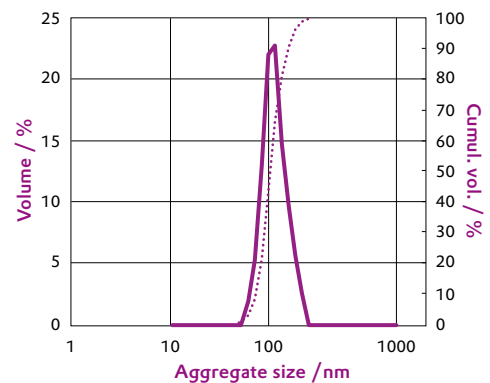
AERODISP® - our fumed alumina dispersions enable the preparation of ultra-thin ($\leq 1 \mu\text{m}$), homogeneous ceramic coatings, which is not possible using conventional coarser particles.



Evonik offers commercial AERODISP® and experimental VP Disp. dispersion products* for the preparation of reliable separator coatings. High-quality AEROXIDE® fumed alumina powders and many years of expertise in dispersion chemistry means you can expect:

- **stable, highly filled fumed alumina dispersions (up to 50 wt%),**
- **uniform and small particle size distribution (< 300 nm) and low viscosity for easy processing**

*) Developmental products are labeled with the VP designation. Their commercialization depends on market response. Even though they may be produced in commercial quantities, future availability should be verified. In some cases, these products may not have undergone complete testing



Particle size distribution of dispersed AEROXIDE® in water

Recommended fumed alumina dispersions for separator coating application

Product name	Solid Content [wt%]	Particle System	Surface Charge	pH value
AERODISP® W 440	40	AEROXIDE® Alu 65	positive	3.0 - 5.0
VP Disp. W 4150	50	fumed alumina with lower surface area	positive	3.0 - 5.0
AERODISP® W 450 ZX	50	AEROXIDE® Alu 65	negative	6.0 - 9.0
VP Disp. W 450 XC6	50	AEROXIDE® Alu 65	negative	8.0 - 10.0
VP Disp. W 4150 XC6	50	fumed alumina with lower surface area	negative	8.0 - 10.0

Typical values, no specification.

If you have questions about the differences between grades or separator coating application, contact Evonik's experts. Our dispersions can be specifically designed to meet your requirements.

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