



KROSSLINKER

## KROSSLINKER AEROGEL FOR ELECTRIC VEHICLE APPLICATIONS

### Company Introduction:

KrossLinker is a venture capital backed, advanced material start-up based in Singapore founded by a team of scientist co-founders. Our primary focus is solving challenging thermal insulation applications. We develop a class of thin, lightweight Silica Aerogel Composites with industry leading insulation performance. For the first time, we have addressed several challenges of traditional aerogels such as dust, brittleness, high cost and thickness limitation with our disruptive patented platform technology for fabrication and formulation of this advanced material. Our aim is to make this premium material affordable and accessible across all mainstream insulation markets.

### KrossLinker Aerogel for EV Application:

Electric vehicle OEMs and automotive battery suppliers are constantly trying to optimise battery systems to improve range, lifespan, charge rate and safety of EVs. An integral part of this process is ensuring that the battery stays within the optimal temperature ranges with the use of energy efficient thermal management systems. A key consideration here is the choice of protective insulation materials. Fabricated using our patented proprietary technology, KrossLinker's thin, light-weight and durable aerogel composites offer superior thermal insulation and fire protection to electric vehicles. The applications/use-cases include:

- **Protection of battery from external temperature variations:** Our aerogels (used in conjunction with thermal interface materials) can ensure that the batteries are kept within the optimal temperature ranges by thermally insulating the battery packs from harsh regional weather conditions (and seasonal changes), minimising energy wastage from active thermal management and thereby improving the performance and life-span of batteries in electric vehicles.
- **Barrier against thermal runaway:** Our fire-retardant, and self-extinguishing aerogels can be placed between battery cells/modules to prevent propagation of fire (caused by overheating/extreme temperature rise) to adjacent cells/modules. This can limit thermal runaway hazard and ensure vehicle and passenger safety.
- **Other thermal management applications:** This durable aerogel insulation can also be incorporated into roof, door-frames, hood of the vehicle in half the space as conventional foam material. Further, with the highest thermal insulation performance, it permits usage of less power from the battery to create the perfect in-cabin climate.





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### KrossLinker Silica Aerogel Board Properties

Material Property	KL Si Aerogel Board
Thermal Conductivity (W/mK)	0.018 - 0.020
Thickness (mm)	5 - 50
Density (kg/m <sup>3</sup> )	80 - 150
R Value (/inch)	7.2 - 8
Operating temp range (C)	-150 to 300
Maximum sheet size (m)*	1.2 x 0.8
Compressive strength (MPa)	0.3 - 1
Contact angle/Hydrophobicity ( $\theta$ )	130 - 150

\*Commercial production size. The material can be cut to any size with an ordinary pen knife eliminating the need for competent labour/specialised equipment.